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# Examining the national longitudinal survey of children and youth: A profile of Canadian adolescent sexuality.

Rita. Gillis

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EXAMINING THE NATIONAL LONGITUDINAL SURVEY OF CHILDREN AND  
YOUTH: A PROFILE OF CANADIAN ADOLESCENT SEXUALITY

by

Rita Gillis

A Thesis  
Submitted to the Faculty of Graduate Studies and Research  
through Sociology  
in Partial Fulfillment of the Requirements for  
the Degree of Masters of Arts at the  
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2005

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## Abstract

Adolescence is a period of development that is characterized by numerous biological, cognitive, and psychosocial changes. Throughout adolescence, individuals gradually abandon their identity as “children” and progressively begin to assume adult demeanor and conduct. In assuming adult roles, adolescents participate in behavior traditionally reserved for adults. This behaviour includes use of substances such as tobacco, alcohol, and other drugs, formation of intimate relationships, and engagement in sexual intercourse. The present investigation conceptualizes adolescent sexual activity as a learned behavior and uses indicators of learning through direct experience and observation from social learning theory to create a model for explaining sexual activity among Canadian youth. Data from the National Longitudinal Survey of Children and Youth (NLSCY) were used to examine the effects of indicators of learning on whether adolescent males and females report engaging in sexual intercourse, age at which they initiate sexual intercourse, and the progressive nature of sexual activity. The cross-sectional sample for the present study represents 5580 adolescents and the longitudinal sample represents 1783 participants, all participants were between the ages of 12 and 17 years of age. The method of analysis included ordinary least squares and logistic regressions. Indicators of direct experience and observation were tested to determine the effect on adolescent engagement in sexual intercourse. This study found that indicators of direct experience and observation contributed to predicting engagement in sexual intercourse; however, there were some differences between 12-15 year olds and 16-17 year olds, as well as some differences based on gender. Concerning the hypothesis that sexual activity, as an adult role that adolescents assume, is cumulative and progressive in

nature, result indicated that on average, sexual intercourse at 16-17 years of age (Cycle 4) can be predicted by experience with a boy/girlfriend at 14-15 years of age (Cycle 3) and level of sexual experience at 12-13 years of age (Cycle 2).

## Dedication

This thesis is dedicated to my wonderful family, who are my dearest friends, for your love, support, encouragement, and most of all for believing me.

Thank you.

## Acknowledgement

I would like to acknowledge my thesis supervisor, Dr. Eleanor Maticka-Tyndale. Without her continuous support, advice, and patients, I do not believe this thesis would have been possible.

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## Examining the National Longitudinal Survey of Children and Youth: Creating a profile of Adolescent Sexual Experiences

Adolescence in western communities is traditionally regarded as a transitory period between childhood and adulthood characterized by biological, cognitive, and psychosocial changes. Throughout adolescence, children are introduced to and gradually take on adult characteristics such as enhanced autonomy and responsibility and behaviours (both desirable and undesirable) such as labour force participation, driving a car, use of recreational substances such as alcohol, tobacco, and other drugs, and formation of intimate boyfriend/girlfriend relationships. Often such relationships maintain a presumption of heterosexuality, which are perpetuated through socio-cultural norms and expectations. As part of this developmental process, adolescents often contest the social norms of their parents as a means of establishing their own individuality (Blum, Beuhring, & Rinehart, 2000). This presents a challenge to policy makers, parents, and educators who must differentiate between acceptable and unacceptable behaviours, the latter often deemed unacceptable because they carry detrimental long term consequences and are potentially harmful to health and well being (Kirby, 1999). The intimate sexual relationships of adolescents, the focus of this study, illustrate this challenge with some characteristics of interpersonal intimacy beneficial to adolescent development and others posing potential harmful consequences.

While the majority of youth progress through adolescence with little or no negative consequences, a small percentage experience complications as a result of their decisions and actions related to sexual intimacy. Pregnancy, in particular, places female adolescents at increased risk of educational and economic disadvantages (Maticka-Tyndale, 2001; Marin, Coyle, Gomez, Carvajal, & Kirby, 2000; Goodson, Evan, &

Edmundson, 1997) and sexually transmitted infections (STIs) threaten the long term health of both male and female adolescents. Concerns about health and economic consequences, as well as attempts to understand some of the positive outcomes for adolescent development have sparked a proliferation of studies enumerating predictors of adolescent sexual intercourse. Such studies have examined factors such as level of conventionality, importance of school, and influence of parents and peers (French & Dishion, 2003; Whitbeck, Yoder, Hoyt, & Conger, 1999). However, a Canadian perspective that focuses exclusively on adolescents is missing from the existing literature. The present study will attempt to rectify this void in attempting to examine the effects of indicators of learning on whether adolescent males and females report engaging in sexual intercourse, the age at which they initiate sexual intercourse, and the progressive nature of sexual activity.

### *Theoretical Perspective*

Social learning theory addresses both the personal and environmental influences on an adolescent's decision to engage in sexual intercourse. It conceptualizes human behavior in terms of a triadic, dynamic, and reciprocal model in which behavior, personal factors, and environment simultaneously interact and influence one another (Goodson et al., 1997; Whitbeck, Conger, Simons, & Kao, 1993).

Social learning theory describes behavior as learned within a social context that includes age-specific socio-cultural expectations (Bandura, 1977). Thus, engaging in sexual intercourse is subject to age-specific norms and expectations (Muuss, 1976) and requires an adolescent to develop a skill set. Bandura (1977) identifies two methods of learning skills: direct experience and observation. Skills are learned through direct

experience when an individual is rewarded or punished for behaviour that is instinctively displayed or an existing skill set is used. Positively rewarded behaviours and the skills required to perform them are retained in memory and those that are negatively reinforced are extinguished.

Learning through observation occurs when valued role models are observed and their behaviour (and skills) are imitated. Those behaviors and skill sets that are imitated are the ones observed most frequently and performed by role models with whom the individual identifies (Bandura, 1977). Learning is cumulative, that is, once an individual has successfully learned a particular skill set, he/she then builds upon and combines skill sets to perform more sophisticated and complicated behavior.

#### *Literature Review*

Reiss (1986), consistent with the tenets of social learning theory, investigated the cumulative nature of learning as it relates to sexual expression. Reiss contends that sexuality is learned and that this learning occurs within a social context and as such is subject to socio-cultural expectations. In much the same way an individual learns to participate in friendships, individuals are socially taught how to create a 'passageway' that will lead them to engage in sexual interaction with others. Within Canadian society, part of navigating such a 'passageway' requires individuals to adhere to socio-cultural expectations which are perpetuated through social norms and laws. An example of such social norms and laws include legal age of consent. According to the Canadian Criminal Code, consensual sexual activity with or between persons 14 years or over is legally permitted (Pilon, 2001). Furthermore, consensual activity with those under 14 but over 12 may not be an offense if the accused is under 16 and less than two years older than the

complainant. The creation and enforcement of such laws assist in the construction of socio-cultural norms and create and reinforce dominant values and traditions concerning adolescent sexuality.

As previously mentioned, the development of such a 'passageway' requires the acquisition of social skills (Nangle & Hansen, 1998). Such skills are required for an adolescent to commence, sustain, and terminate social and sexual relationships. The development of such skill sets encourages interpersonal competence and promotes more adult-like behavior. Whitbeck et al. (1993) reported that participation in one type of adult-like behavior such as use of recreational substances, participation in the labour force, or driving a car, accelerates the likelihood of an adolescent engaging in other forms of adult-like behavior such as sexual intercourse. Similar to laws regarding legal age of consent for sexual intercourse, which signal when such activity is permitted, there are numerous maturational markers that signify other entries into adult status. For example, individuals 16 years of age can legally drop out of school and individuals 18 or 19 years of age (depending on province of residence) can purchase and consume alcohol and tobacco.

Social learning theory contends that the norms and values of the model will often be the same norms and values demonstrated by the individual (Bandura, 1977). It is those norms and values that an individual is exposed to most frequently that are likely to be most thoroughly internalized and retained in memory. This is particularly important to acknowledge when examining the intimate sexual relationships of adolescents. Carvajal et al. (1999) clearly illustrate that peers tend to have more liberal attitudes towards sexual activity in adolescence. Furthermore, if adolescents associate with individuals who

condone, promote, and participate in sexual activity, they are more likely to engage in various forms of sexual expression themselves (DiIorio, Kelley, & Hockenberry-Eaton, 1999). Alternatively, DiIorio et al. (1999) found that when parents were the main source of sexual information, adolescents postponed sexual intercourse and engaged in less health compromising sexual behavior (e.g., using contraceptives).

In order for parents to act as primary socializing agents, they must be the models that are evidenced most frequently by adolescents. Low levels of parental monitoring have been associated with an increase in “problem behavior” as it implies that adolescents spend an increasing amount of time unsupervised with role models from whom they learn behavior and skill sets that may deviate from those of their parents (French & Dishion, 2003). Parents who are heavily involved with their children and are aware of their whereabouts, companions, and activities are commonly referred to as high parental monitors. Closely related to parental monitoring is familial configuration. Previous research has indicated that adolescents in single-parent families tend to become sexually active earlier than those living in a two-parent household (Whitbeck et al., 1999). However, Lammers, Ireland, Resnick, and Blum (1999) argue that it is actually a lack of parental supervision that increases the likelihood of an adolescent engaging in sexual intercourse rather than being a member of a single-parent household.

Marcil-Gratton (1998) in her analysis of children in the National Longitudinal Survey of Children and Youth (NLSCY) noted the fluidity of current Canadian families and commented on the diverse patterns of parenting and the implications for children and adolescents developing within these fluid familial structures. While most children continue to be born into a two-parent family, the conjugal ties that unite the parents have

become gradually more supple (Marcil-Gratton, 1998). As a result of the flexibility of parental ties to each other, new relationships with different romantic partners are common. For instance, within the family environment children and adolescents may witness the end of their parents' marriage and then observe their parents engaging in romantic relationships with other individuals; further facilitating learning through observation as proposed in social learning theory.

Utilizing characteristics of social learning theory, Thornton and Camburn (1989) documented a relationship between higher levels of parental education and lower levels of sexual activity in adolescents. Thornton and Camburn rationalized that parents act as role models for their children to emulate. In order for individuals to be successful in achieving high levels of education they must devote much of their time to their studies and attempt to avoid activities that may jeopardize their high educational aspirations, including engaging in sexual intercourse, marriage, and the birth of children.

The commonly observed gender differences in sexual activity are also explained by social learning theory. According to social learning theory, individuals tend to imitate models of their own gender, thus the experiences and skill sets of males and females are distinct (Nagle & Hansen, 1998). Tolman (2002) clearly illustrates how skill sets of males and females differ with regards to their sexual expression. Tolman emphasizes that adolescent females receive messages from society that serve to desexualize them and deny them of sexual subjectivity, which includes acknowledgment and legitimization of their identity as sexual beings who are entitled to sexual pleasure and safety, and who are capable of controlling their sexual destiny. While females are traditionally denigrated for sexual experimentation, male reputations are often enhanced in accordance with their

sexual experience (Paul, McManus, & Hayes, 2000; Tolman, 1994; Lees, 1989). Male experimentation with sexual expression tends to be socially sanctioned and accepted as part of “normal” male development (Crawford & Popp, 2003; Tolman, 2002; Fredrickson & Roberts, 1997; Mewhinney, Herold, & Maticka-Tyndale, 1995).

### *Theoretical Model*

The first purpose of this study is to utilize components of social learning theory to create a model for explaining early sexual intimacy among Canadian adolescents. Social learning theory contends that individuals learn skill sets through observation and direct experience and that the utilization of such skill sets are subject to age-specific norms and expectations (Bandura, 1977). As adolescents mature, they pass chronological milestones and socio-cultural expectancies of “acceptable” behavior change.

### *Hypothesis 1:*

Based upon these suggestions, it is hypothesized that the following characteristics and experiences will lead an individual to postpone first sexual intercourse: (1) delay of puberty development; (2) no relationship experience with a boy/girlfriend; (3) little or no involvement with smoking, drinking, and drugs; (4) high level of school commitment; (5) distant relationship with peers; (6) close relationship with parents; (7) high level of parental monitoring; (8) residing in a two parent household; (9) adult status of parents at birth of child.

Second, the cumulative nature of learning as implied by social learning theory will be probed in order to determine the influence of heterosexual relationship experience and level of sexual expression on engagement in sexual intercourse within a Canadian perspective.

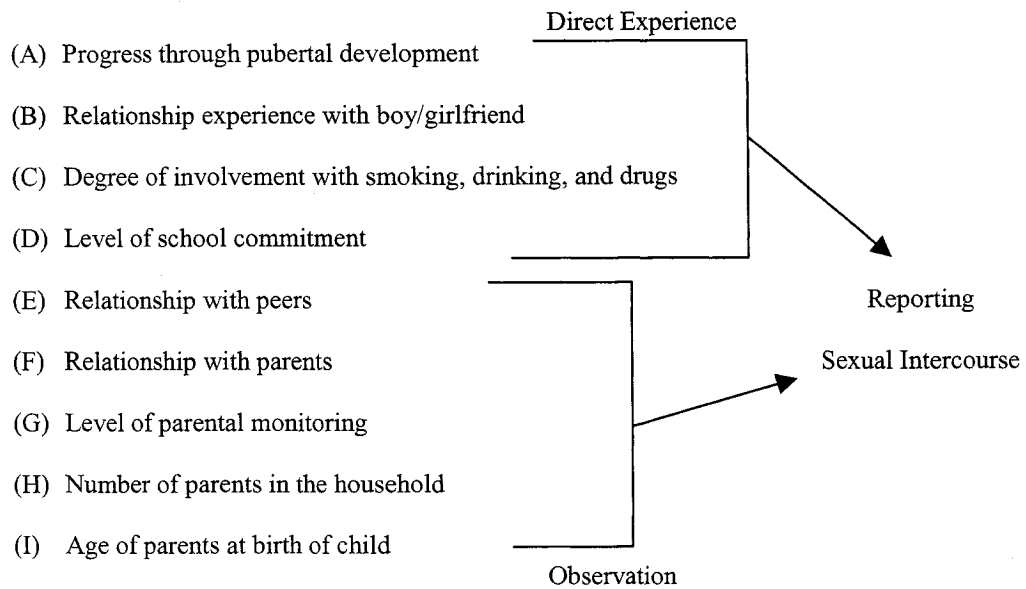


*Hypothesis 2:*

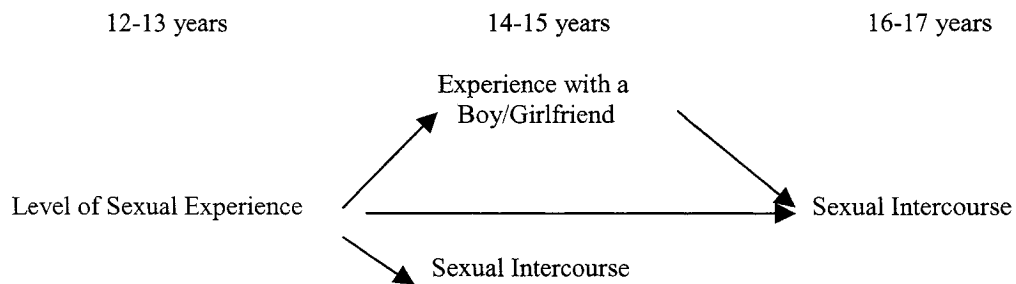
It is hypothesized that youth who are more experienced in terms of level of sexual experience at 12-13 years of age will be more experienced at 14-15 years of age and at 16-17 years of age.

Figure 1: Models of Analysis

Model 1:



Model 2:



## *Methodology*

### *Data Source*

Data were extracted from the National Longitudinal Survey of Children and Youth (NLSCY), which was developed in partnership by Statistics Canada and Human Resources Development Canada (HRDC). The primary purpose of the NLSCY was to create a national database on the characteristics and life experiences of children and youth in Canada as they grow from infancy to adulthood (HRDC, 1996). A representative sample of Canadian children from birth to 11 years of age was selected in Cycle 1 and the main care provider of the child, or the child him or herself (i.e., those who were 10 or 11 years old), were interviewed. Interviews commenced in 1994-1995 and have continued every two years. As of 2004, the survey has completed four cycles, and current plans are to follow the original cohort of youth until they reach 25 years of age. Cycle 2, 3, and 4 will be used in the present analysis to examine the data longitudinally. Data from Cycle 1 was not analyzed because it did not include information on the sexual experiences of respondents. Cycle 4 was used for cross-sectional examination and testing hypothesis 1 because it includes the largest sample of youth in their teens. Cycles 2-4 were used in testing hypothesis 2.

Data for the NLSCY were collected from a representative sample of households in all 10 Canadian provinces (HRDC, 1996). Adolescents involved were required to live in private households. Children living in institutions, on Native Reserves, and those living in some remote regions were not sampled. Children in each economic family (i.e., all members that are related by blood, marriage, common-law relationship, adoption, or foster children) were randomly selected up to a maximum of two children per household.

The second, third, and fourth collection cycles targeted individuals in order to permit longitudinal examination. Children from the respondent household for the first cycle were between two and 13 years of age in Cycle 2, between four and 15 years in Cycle 3, and between six and 17 years of age in Cycle 4.

Analysis for the present study was limited to the 1996-2002 (Cycles 2-4) self report portion of the NLSCY, in which detailed information was collected on a variety of topics such as, relationships with friends and family, school, puberty, and dating. Some of the socio-demographic information was retrieved from interviews with the main care provider of the adolescent. Single respondents between the ages of 13 and 17 years, who completed the self report questionnaires, were considered for the analysis. The Cycle 4, cross-sectional sample represented 5580 adolescents and the Cycle 2 to 4 longitudinal sample represented 1783 participants. Weights calculated by Statistics Canada were used to correct for the stratified sampling procedure.

#### *Reliability and Validity*

Scales within the self report questionnaire of the NLSCY were tested by Statistics Canada in Cycle 1 for reliability and validity (HRDC, 1996). However, some of the items included in the tested scales were changed in later cycles in order for the questionnaire to remain age appropriate, posing the question of equivalence across cycles. Consequently, the internal validity of each scale was confirmed using both factor analysis and reliability measures (See Table 1 for alpha levels) for each cycle in which it was used. The Cronbach alpha levels ranged from .62 to .83. These were consistent with Statistics Canada levels and suggest that the scales provided a reliable measure of the

variables in question. Reliability coefficients in the range of .60 or higher are considered sufficient for group level comparisons (i.e., males and females) (Polit & Hungler, 2004).

A similar problem was encountered with a measure of sexual experience. Literature pertaining to the NLSCY stated that only heterosexual adolescents were included, however the literature does not indicate how this was determined, and there were no questions within the survey that probe sexual orientation. Many of the questions pertaining to adolescent romantic relationships were phrased as experiences with a “boy/girlfriend”, leaving open the possibility of a same sex relationship. Therefore, interpretation of the result of the present study must be viewed with caution because it is not clear whether the experiences reported concern heterosexual or homosexual relationships.

#### *Independent Variables*

Items from the NLSCY were selected as indicators of direct experience or learning through observation. These selected measures were used to create a model for explaining adolescent sexual intimacy and included indicators such as: (a) relationship experience with a boy/girlfriend; (b) progress through puberty development; (c) involvement with smoking, drinking, and drugs; (d) level of commitment to school; (e) level of parental monitoring; (f) close relationship with parents; (g) teen status of parents; (h) presence of close friends; and (i) residing in a two parent household.

Table A: Measures of Social Learning Theory as Defined by Indicators of Learning through Direct Experience and Observation

<i>Concept</i>	<i>Indicator/Definition</i>	<i>Coding</i>
<i>Socio-demographic Characteristics:</i>		
<u>Region</u>	In what province do you reside:	Variable was dummy coded:
	10/ Newfoundland	Variable ‘atlantic’
	11/ Prince Edward Island	0. do not reside in Atlantic
	12/ Nova Scotia	provinces
	13/ New Brunswick	1. reside in Atlantic provinces

	24/ Quebec 35/ Ontario 46/ Manitoba 47/ Saskatchewan 48/ Alberta 59/ British Columbia	Variable 'quebec' 0. do not reside in Quebec 1. reside in Quebec Variable 'ontario' 0. do not reside in Ontario 1. reside in Ontario Variable 'prairies' 0. do not reside in the Prairies 1. reside in the Prairies Variable 'bc' 0. do not reside in British Columbia 1. reside in British Columbia Variable was recoded: 1. 8 years or less 2. 9 years 3. 10 years 4. 11 years 5. 12 years 6. 13 years 7. 14 years 8. 16 years 9. 18 years or more
<u>PMK's Years of Education</u>	Main care providers years of education: 1/ 3 years 2/ 6 years 3/ 7 years 4/ 8 years 5/ 9 years 6/ 10 years 7/ 11 years 8/ 12 years 9/ 13 years 10/ 14 years 11/ 16 years 12/ 18 years 13/ 20 years	
<u>Low-income Cut-off</u>	A statistic created by Statistics Canada that estimated the percentage of gross income spent by the average Canadian family on food, clothing, and shelter. This percentage is then arbitrarily marked up by 20 percentage points. This final percentage corresponds on average to a given household income level and this level becomes the low-income cut off for that year. The low-income cut-off were based on income measures from 1992	Low-income cut-off ranged from 14561 to 46793
<b><u>Direct Experience Indicators:</u></b> <u>Relationship Experience</u>	Referring to a romantic relationship with a girlfriend for males and with a boyfriend for females: How old were you when you had your first boy/girlfriend?	0. never had a boy/girlfriend 1. indicated an age of having a boy/girlfriend
<u>Progress through Puberty Development</u>	Females: Have your breasts begun to grow? Have you begun to menstruate? Males: Have you noticed a deepening of your voice? Have you begun to grow hair on your face?	For each item: 0. Has not yet started 1. Has barely started 2. Definite changes 3. Seems complete Responses summed to create scores 0. prepubertal through

	Responses for all indicators: 1/ Has not yet started 2/ Has barely started 3/ Definite changes 4/ Seems complete	6 pubertal development seems complete (Dick, Rose, Pulkkinen & Kaprio, 2001)
<u>Smoking</u>	Which of the following best describes your experience with smoking cigarettes: 1/ I have never smoked 2/ I only tried once or twice 3/ I do not smoke anymore 4/ A few times a year 5/ About once or twice a month 6/ About 1-2 days a week 7/ About 3-5 days a week 8/ About 6-7 days a week	0. I have never smoked or I only tried once or twice 1. All others
<u>Drinking</u>	Experience drinking: Which of the following best describes your experience drinking alcohol: (wherein a drink of alcohol included one bottle of beer, or one glass of wine, or one shot of liquor) 1/ I have never had a drink of alcohol 2/ I have only had a few sips 3/ I only tried once or twice (at least one drink) 4/ I do not drink alcohol any more 5/ A few times a year 6/ About once or twice a month 7/ About 1-2 days a week 8/ About 3-5 days a week 9/ About 6-7 days a week	0. Do not drink or only drank a few sips 1. All others
<u>Using Marijuana</u>	Experience using marijuana: Which of the following best describes your experience with using marijuana and cannabis products (also known as a joint, pot, grass, or hash) during the past 12 months? 1/ I have never done it 2/ I have done it, but not during the past 12 months 3/ A few times 4/ About once or twice a month 5/ About 1-2 days a week 6/ About 3-5 days a week 7/ About 6-7 days a week	0. Never used marijuana or cannabis products 1. All others
<u>Other drugs</u>	Experience using other drugs: Combination of four items which stated: Which best describes your experience with the following	0. Never used any other drugs 1. Has used at least one of the other drugs

drugs during the past 12 months:

- A) Hallucinogens like LSD/acid, magic mushrooms
- B) Glue or solvents
- C) Drugs without a prescription or advice from a doctor: downers, uppers, tranquilizers, Ritalin, etc.
- D) Other drugs like crack, cocaine, heroin, speed, or ecstasy, etc.

1/ I have never done it.

2/ I have done it, but not during the past 12 months.

During the past 12 months I have used it:

3/ 1 to 2 times

4/ 3 to 5 times

5/ 6 to 9 times

6/ 10 or more times

Level of commitment to school

Measure of the importance of school: How important is it to you to do the following in school:

- A) Make friends?
- B) Get good grades?
- C) Participate in extra-curricular activities?
- D) Learn new things?
- E) Always show up for class on time?
- F) Express your opinion in class?

1/ Very important to

4/ Not important at all

Reverse coded items and summed, creating a high score of 21 and a low score of 0. Higher scores represented a high level of school commitment and a low score represented a low level of commitment.

Parental monitoring

Measure of respondents accountability to guardians:

Items for 12-15 year olds:

What best describes the way your parents (or stepparents, foster parents, or guardians) in general have acted towards you during the past 6 months. My parents...

- A) want to know what I'm doing and where I am.
- B) tell me what time to be home when I go out.
- C) find out about my misbehavior.
- D) take an interest in where I am going and who I am going with.

Items for 16-17 year olds:

Each respondent was given a score between 0 (high level of parental monitoring) and 16 (low level of parental monitoring).



- A) want to know what I'm doing and where I am.
- B) tell me what time to be home when I go out.
- C) ask me to leave a note or call to let them know where I am going.
- D) let me know how to get in touch with them when they are not home.

- 1/ Always
- 2/ Often
- 3/ Sometimes
- 4/ Rarely
- 5/ Never

*Sexual Experience 12-13 years (Cycle 2)*

How often have you had the following experiences with a boy/girlfriend:

- A) Holding hands
- B) Hug
- C) Kiss
- D) Pet above the waist
- E) Pet below the waist
- F) Sexual intercourse (go all the way)

- 1/ Never
- 2/ Once
- 3/ A few times
- 4/ Often

Respondents were given the score for the question with the highest number for which they indicated at least some experience.

- 0. No experience
- 1. Experience holding hands & no higher
- 2. Experience hugging & no higher
- 3. Experience kissing & no higher
- 4. Experience petting above the waist & no higher
- 5. Experience petting below the waist & no higher
- 6. Experience having sexual intercourse

*Observational Learning: Teen status of parents*

Age of parents at time of child's birth as reported by the main care provider of the adolescent:

- 0/ Parents were not teenagers at birth
- 1/ At least one parent was a teenager at birth
- 2/ Unknown if one parent was a teenager, other parent was not a teenager

Variable was dummy coded:  
Variable 'adult'

- 1. Post teen ( $\geq 20$  years) status of parents at birth
  - 0. Teen status of parents at birth or unknown status of one parent, other parent was not a teenager
- Variable 'teen'
- 1. Teen status of parents at birth
  - 0. Post teen status or unknown status
- Variable 'unknown'

- 1. Unknown status of one parent, other parent was not a teenager
- 0. Post teen status or teen status

Each respondent was given a score between 0 (respondent did not have a lot of friends and did not have positive relationships with other adolescents) and 16 (respondent had a lot of friends)

*Presence of close friends*

A measure of relationship quality with other adolescents included:

- A) I have many friends.
- B) I get along easily with others my age.
- C) Others my age want me to be

Residing in a two parent household

- their friend.  
 D) Most others my age like me.  
 1/ False  
 2/ Mostly false  
 3/ Sometimes true/sometimes false  
 4/ Mostly true  
 5/ True

- Who does child live with:  
 11/ both biological parents  
 21/ biological mother and step father  
 22/ biological father and step mother  
 31/ 2 adoptive parents  
 41/ 1 biological and 1 adoptive  
 42/ 2 parents-other: 1 biological and 1 foster  
 43/ 2 parents-other: 2 step  
 44/ 2 parents-other: 1 adoptive and 1 step  
 45/ 2 parents-other: 1 adoptive and 1 foster  
 46/ 2 parents-other: 2 foster  
 47/ 2 parents-other: one foster and 1 step  
 51/ biological mother and no father  
 61/ biological father and no mother  
 71/ single parent-other: 1 female non-biological parent  
 72/ single parent-other: 1 male non-biological parent  
 81/ does not live with a parent  
 82/ youth is living independently (aged 16 and over)

Close relationship with parents

Level of closeness and quality of relationship with mother and father:

- A) How well do you feel that you mother understands you?  
 B) How much fairness do you receive from your mother?  
 C) How much affection do you receive from your mother?  
 1/ A great deal  
 2/ Some  
 3/ Very little/Not at all or none  
 D) Overall, how would you describe your relationship with your mother?

and positive relationships with other adolescents)

Categories were collapsed  
 0. Households that contained two parental-figures (biological, adoptive or step)  
 1. All other compositions

Items were reverse coded and summed, to create a high score of 16 and a low score of 0. Higher scores indicating a close high quality relationship with parents.

- 1/ Very close
- 2/ Somewhat close
- 3/ Not very close
- E) How well do you feel  
that you father  
understands you?
- F) How much fairness do  
you receive from your  
father?
- G) How much affection do  
you receive from your  
father?
- 1/ A great deal
- 2/ Some
- 3/ Very little/Not at all or none
- H) Overall, how would you  
describe your  
relationship with your  
father
- 1/ Very close
- 2/ Somewhat close
- 3/ Not very close

### *Missing Values*

Frequencies indicated the percentage of missing cases for each construct. For each variable, the proportion of missing cases was 20% or more, however the missing cases were not the same 20% throughout the NLSCY. In view of this, a missing value indicator was created for each variable and tested for the significance of its effect. If it was statistically significant it was left in the full regression.

### *Data Analysis*

Data for individuals between the ages of 12 and 17 years who completed the self report portion of the NLSCY (Cycles 2-4) were analyzed. The cross-sectional analysis was run separately for males and females, while the longitudinal analysis did not distinguish between males and females. Descriptive and diagnostic statistics were calculated to assess the suitability of the sample for further analysis. Since 20% or more of the sample failed to answer most questions, the significance of the impact of missing

values on estimates was examined by testing missing value indicators for each independent variable. Smaller regression models, containing the independent variable along with its missing value indicator, were utilized to determine the effect of missing cases. Based upon these smaller regression models, only those predictors and missing value indicators that accounted for a significant percentage of the variance were entered into the larger regression models.

Cycle 4 data were used to test hypothesis 1, which stated that indicators of direct experience and observational learning could promote or postpone sexual intercourse. Four logistic regression models were run with experience with sexual intercourse regressed on: (1) relationship experience with a boy/girlfriend; (2) progress through puberty development; (3) involvement with smoking, drinking, and drugs; (4) presence of close friends; (5) closeness of relationship with parents; (6) residing in a one or two parent household; (7) level of parental monitoring; (8) level of commitment to school and; (9) teen or non-teen status of parents at birth of child. These were run separately for 12-15 year olds and 16-17 year olds because indicators for school commitment and parental monitoring were measured differently for the two age groups. A hierarchical three block model was estimated with socio-demographics entered in the first block, all other variables in the second, with the exception of involvement with smoking, drinking, and drugs, which were entered in the third block. Involvement with smoking, drinking, and drugs was entered separately from other direct experience indicators because of the tendency for these behaviors to cluster together.

Next, for adolescents ages 14-17 who had engaged in sexual intercourse, age of first intercourse was regressed on the same variables listed above.<sup>1</sup> Again, a hierarchical three block model was estimated.

Hypothesis 2 stated that youth who are more experienced in terms of level of sexual expression at 12-13 years of age, will be more experienced at 14-15 years, and 16-17 years of age (i.e., sexual intimacy is progressive). Only those youth who were 16-17 years of age at Cycle 4 and who completed the self report questionnaire in Cycles 2 and 3 were included. Two hierarchical block models using logistic regression, together with a test of the mediating effect of experience at 14-15 years of age, were used to test hypothesis 2. These are diagrammed on page 8.

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<sup>1</sup> 12-13 year olds were not included in the analysis because they were not given an opportunity to report an age

## Results

### *Sample Profile*

The cross-sectional sample from Cycle 4 and longitudinal samples of adolescents for Cycles 2, 3, and 4 were used in data analysis. The weighted cross-sectional sample represented 2864 males and 2716 females between 12 and 17 years of age who completed the Cycle 4 self-complete questionnaire. The weighted longitudinal sample represented 1784 participants, 874 males and 910 females.

Table 2 presents the socio-demographic profile of the cross-sectional sample. Weighting the sample made its overall distribution across regions a close approximation to the population of Canada, with the greatest proportion residing in Ontario. The sample was predominantly Caucasian (87.4%), most respondents were classified as belonging to upper middle or highest levels of income (67.7%), and the majority of adolescents had a main care provider with between 12 and 13 years of education (57.5%). The high level of income suggests the sample responding to the NLSCY may over-represent those in higher income categories.

### *Learning through Direct Experience Indicators: Differences between Males and Females*

Table 3 illustrates differences between males and females in the cross-sectional sample in direct experience indicators associated with the transition to adulthood. Over 60% of both males and females reported experience with a boyfriend or girlfriend. Females were significantly more likely to report smoking and drinking (29.5% and 52.1% respectively) than were males (21.7% and 48.3% respectively). Also, females were significantly more mature concerning their pubertal development than their male

counterparts. Females 12-15 years of age and 16-17 years of age scored significantly higher (15.8 and 15.6 respectively) than males (15.2 and 14.9) on level of commitment to school.

Analysis of the longitudinal data revealed that at 12-13 years of age, males were more experienced than females on items from the sexual experience scale. More males than females had experience holding hands, kissing, petting above and below the waist, and engaging in sexual intercourse (see Table 4). Experience hugging was the only item that females reported more experience than their male counterparts (54.8% and 53.9% respectively). However, by the time adolescents turned 14-15 years of age, more females (14.1%) than males (9.4%) reported sexual intercourse. By 14-15 years of age, 70.1% of females and 69.3% of males had experience with a boy/girlfriend. Similar to the trend displayed by 14-15 year olds, more 16-17 year old females had engaged in sexual intercourse than males (45.1% and 35.3% respectively).

*Learning through Observation Indicators: Differences between Males and Females*

Table 5 illustrates that significantly more females resided in non-two parent households than males (38.7% and 33.7% respectively) and significantly more males than females were born to parents who were 20 years or older (68.9% and 63.5% respectively); whereas, more females than males were likely to have one parent who was not a teen while the other parent's age was unknown. Significant differences between males and females concerning level of closeness to parents and friends and high level of parental monitoring were noted (see Table 5). Males reported a higher level of closeness to parents while females indicated a higher level of closeness to peers. Despite these findings, females in both age groups (i.e., 12-15 and 16-17 years) reported higher levels

of parental monitoring than their male counterparts (a high score on the parental monitoring scale equates to a low level of parental monitoring).

### *Correlation Matrix*

Prior to hypothesis testing, a correlation matrix (see Table 6) was created to examine the bivariate relationships between the variables. Table 6 illustrates that indicators of learning through direct experience displayed weak to moderate associations with each other ( $r = -.10$  to  $.41$ ) with the exception of involvement with smoking, drinking, and drugs ( $r = .40$  to  $.62$ ). The latter moderate to high correlations reflect the well established clustering of these behaviors. The correlation matrix indicates that smoking ( $r=.27, p\leq.001$ ), drinking ( $r=.39, p\leq.001$ ), and use of drugs (marijuana  $r=.34, p\leq.001$ ; other drugs  $r=.21, p\leq.001$ ) were positively correlated with age and positively correlated with sexual intercourse (smoking  $r=.46, p\leq.001$ ; drinking  $r=.42, p\leq.001$ ; marijuana  $r=.51, p\leq.001$ ; other drugs  $r=.39, p\leq.001$ ; age  $r=.34, p\leq.001$ ). There was a moderate positive correlation between age and experience with a boy/girlfriend, wherein as adolescents matured the likelihood of them having a boy/girlfriend increased ( $r=.34, p\leq.001$ ). Likewise, experience with a boy/girlfriend was correlated with experience having sexual intercourse ( $r=.31, p\leq.001$ ). The other indicators of direct experience displayed a weak relationship with sexual intercourse, ranging from  $.05$  to  $.25$ .

Weak correlations were found among indicators of learning through observation with the exception that those who were living in a single parent household were more likely to have been born when at least one of their parents was not a teenager and the other parent's age was unknown ( $r = .77, p\leq.001$ ) than those living with both parents.



Adolescents who were living in two parent households were more likely to have been born when both of their parents were not teens ( $r = -.76, p \leq .001$ ).

*Hypothesis 1: Direct and indirect experiences associated with growing up are significant predictors of sexual intercourse*

Four logistic regression models were utilized to test hypothesis 1 with models run separately for males and females and for 12-15 year olds and 16-17 year olds. Significance levels of .01 or less were used to reduce the likelihood of a type I error given the large sample size. Results are presented in Tables 7-10.

Hypothesis 1 stated that the following personal factors and environmental influences which are indicators of either direct experience or observational learning were predictive of adolescents engaging in sexual intercourse: (1) relationship experience; (2) progress of puberty development; (3) involvement with smoking, drinking, and drugs; (4) low level of commitment to school; (5) low level of parental monitoring; (6) absence of a close relationship with parents; (7) having parents that were teenagers at the birth of the respondent; (8) presence of close friends; and (9) not residing in a two parent household.

Socio-demographic variables significantly predicted engagement in sexual intercourse for males and females at both 12-15 years of age and 16-17 years of age (see Tables 7-10). In Model 1a (see Table 7), females 12-15 years of age who resided in the Atlantic Provinces ( $OR=2.82$ ), as well as those who resided in Quebec ( $OR=2.85$ ), were at increased odds of engaging in sexual intercourse compared to those living elsewhere. In comparison, males 12-15 years of age were at a greater likelihood of engaging in sexual intercourse if they resided in Quebec ( $OR=2.46$ , See Table 8). Also, the

likelihood of 12-15 year old males engaging in sexual intercourse was greatly reduced with the greater number of years of education their main care provider possessed.

The addition of social learning indicators in model 1b changed the odds ratios of the demographic variables for 12-15 year old males and females; however they continued to have a significant influence. Experience with a boy/girlfriend was a strong predictor for both 12-15 year old males and females (OR=4.15 and 11.97 respectively). Puberty development also figured prominently for males and females, however the effect of puberty was not found to be significant for females with the addition of variables pertaining to smoking, drinking, and use of drugs. Other variables that were significant in model 1b but not in model 1c included closeness to parents and commitment to school for females 12-15 years of age and commitment to school for males 12-15 years of age. This fluctuation suggests the cluster of variables pertaining to smoking, drinking, and use of drugs were accounting for part of the effect of these other variables. That is, a closer relationship with parents and greater commitment to school were associated with lower odds of engaging in sexual intercourse in part because they were associated with lower odds of smoking, drinking and drug use. This latter relationship can be seen in the correlations with closeness to parents (Table 6).

The addition of the direct experience variables of smoking, drinking, and involvement with drugs resulted in a decrease in the odds ratios of the other significant variables with the exception of region for 12-15 year old females (see Table 7, model 1c). The odds of females residing in the Atlantic Provinces engaging in sexual intercourse increased with the addition of these variables, indicating that the differences among regions are in part related to differences in smoking, drinking, and alcohol use among

youth. Once these were controlled for by adding them to the regression, regional differences increased. For males 12-15 years of age, region was no longer a significant predictor and males whose main care providers had higher levels of education were at a very low likelihood of engaging in sexual intercourse. Concerning indicators of direct experience and observation, the odds ratio for experience with a boyfriend was reduced for both 12-15 year old males and females, suggesting that the inclusion of variables concerning involvement with smoking, drinking, and drugs was accounting for some of the boyfriend/girlfriend variance. Puberty development also significantly predicted engagement in sexual intercourse for 12-15 year old males but not females. Males who had completed their pubertal development were 13.2 times more likely to engage in sexual intercourse than males who had not yet begun puberty.<sup>2</sup> Experience smoking and using marijuana increased the odds of 12-15 year old males and females engaging in sexual intercourse (see Tables 7 & 8, model 1c). Experience drinking also significantly predicted the likelihood of 12-15 year old males engaging in sexual intercourse (OR=2.82) but the same result was not found for females.

Although sexual intercourse in the early teens may be considered a distinctly different situation than in the later teens, the primary predictors for 12-15 year olds and 16-17 year olds were not that different. In both cases, it was direct experience of other adult-like behaviors that were the strongest predictors. Examining the socio-demographic characteristics as illustrated in model 1a (see Table 9) females 16-17 years of age who resided in Quebec were at increased odds of engaging in sexual intercourse (OR=2.73) compared to those residing elsewhere in Canada. In comparison, the

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<sup>2</sup> The highest value on the scale is 6. Odds at 6 were calculated as  $\ln \exp(6 \times .43)=13.20$

demographic variables for 16-17 year old males, while significant as a group, were not significant independent of each other (see Table 10, model 1a).

The addition of social learning indicators in model 1b altered the status of some of the demographic characteristics for both males and females. For 16-17 year old adolescents, while indicators of direct experience and observation explained part of how sexual intercourse was affected for youth in Ontario, this was not the case for females from Quebec or males from the Prairies. When controlling for indicators of direct experience and observation, females from Quebec were more likely than females from Ontario to engage in sexual intercourse, while males from the Prairies were less likely to engage in sexual intercourse than males from Ontario. Main care providers years of education was significant for 16-17 year old females but not males, wherein females adolescents whose main care provider had higher levels of education were at reduced odds of engaging in sexual intercourse (see Table 9, model 1b). Those adolescents who had experience with a boy/girlfriend were more likely to engage in sexual intercourse, especially if they were female (female OR=10.01, male OR=2.86), while those who were close to their parents were less likely to engage in sexual intercourse (OR=.92). Differences emerged between 16-17 year old males and females concerning puberty development and parental monitoring. Males who completed puberty were more likely to engage in sexual intercourse than those males who had not yet started puberty. Also, males who experienced the lowest level of parental monitoring were 3.60 times more likely to engage in sexual intercourse than males who experienced high level of parental

monitoring<sup>3</sup>. Neither puberty development nor parental monitoring significantly influenced sexual intercourse for 16-17 year old females.

Model 1c (see Tables 9 and 10) illustrates the shifts that occurred after adding direct experience variables concerning involvement with smoking, drinking, and drugs. The demographic characteristics remained relatively stable for males and females; however, numerous differences between males and females emerged on indicators of direct experience and observation. Experience with a boyfriend decreased from 10.01 to 6.60 for 16-17 year old females, meaning that those females who had experience with a boyfriend were more likely to be involved with the cluster of variables that relate to involvement with smoking, drinking, and use of drugs. It was this involvement that accounted for a portion of the boyfriend/girlfriend influence. For males, those who had completed puberty were 7.69 times as likely to engage in sexual intercourse as those who had not yet started<sup>4</sup>. Although the following differences between males and females did not reach the .01 level of significance and were significant only at the .05 level, the findings highlight interesting distinctions between the influencing factors concerning engagement in sexual intercourse for males and females. For example, females who scored the very closest to their parents had a very low odds ratio of reporting sexual intercourse<sup>5</sup>. In comparison, 16-17 year old males with the highest commitment to school were 5.37 times more likely to engage in sexual intercourse<sup>6</sup>.

Exploring the influence of smoking, drinking, and use of drugs on sexual intercourse, use of marijuana increased the odds of both males and females reporting

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<sup>3</sup> The highest value on the scale is 16. Odds at 16 were calculated as  $\ln \exp (16 \times .08) = 3.60$

<sup>4</sup> The highest value on the scale is 6. Odds at 6 were calculated as  $\ln \exp (6 \times .34) = 7.69$

<sup>5</sup> The highest value on the scale is 16. Odds at 16 were calculated as  $\ln \exp (16 \times -.08) = 0.28$

<sup>6</sup> The highest value on the scale is 21. Odds at 21 were calculated as  $\ln \exp (21 \times .08) = 5.37$

sexual intercourse (see Tables 9 and 10, female OR=2.34, male OR=3.58). Differences emerged between males and females on smoking and use of other drugs. Females who had experience using other drugs were 2.31 times more likely to engage in sexual intercourse than females who did not have experience with other drugs. Alternatively, 16-17 year old males who smoked were at increased odds of 3.03 for engaging in sexual intercourse compared to nonsmoking males.

The logistic regression models indicate that 16-17 year old females who demonstrated some or all of the following characteristics were more likely to engage in sexual intercourse: reside in Quebec, have main care providers with fewer years education, have experience with a boy/girlfriend, involvement with marijuana, and/or other drugs. Alternatively, 16-17 year old males who displayed some or all of the following characteristics were more likely to engage in sexual intercourse: those who score higher on the puberty development scale, those who had experience smoking, as well as those who have used marijuana.

Some of the missing value indicators were significant in each model, signaling that caution must be exercised in interpretation of these results. Males 12-15 years of age who did not respond to questions concerning their level of closeness to their parents were at greater odds of engaging in sexual intercourse (OR = 13.36). Likewise, failure to report the main care provider's years of education increased the odds of 12-15 year old male adolescents engaging in sexual intercourse by 5.11 times. Alternatively, 16-17 year old females who did not respond to questions pertaining to level of closeness to friends were 10.17 times more likely to engage in sexual intercourse. In addition, failure to

report a relationship with a boyfriend increased the likelihood of sexual intercourse (OR = 4.63).

#### *Ordinary Least Squares Regression*

For adolescents who had sexual intercourse experience, age at first sexual intercourse was regressed on socio-demographic variables, indicators of direct experience and observational learning using hierarchical blocks. Regressions were run separately for males and females. In total, socio-demographic characteristics explained 4.6% of the variance for males and 5.4% of the variance in age of first intercourse for females. In model 1a, (see Tables 11 and 12), region was significant for males but not females, with males residing in Quebec and the Prairies engaging in sexual intercourse at a younger age than their Ontario counterparts. In comparison, low income cut off was a significant predictor of early age of sexual intercourse for females (see Table 11).

The addition of social learning theory indicators in model 1b changed the status of some of the demographic characteristics. For males, residing in British Columbia became a significant predictor of age of first sexual intercourse, indicating that the effect of region was suppressed until the addition of indicators of learning through direct experience and observation. No changes were noted for females, suggesting that the socio-demographic characteristics remained an independent influence.

Concerning measures of direct experience of adult-like behavior and experiences, progress of puberty development was a significant predictor of age of first intercourse for both males and females. However, differences did emerge between males and females on indicators of observational learning, wherein closeness to parents was a significant predictor for females but not males. It is also important to note that the missing value

indicator for closeness to friends was significant and a strong predictor for females, however this effect was muted with the addition of variables concerning involvement with smoking, drinking, and drugs. Based on the regression models demonstrated in Tables 11 and 12, the previous indicators explained an additional 13.3% of the variance for males, and a further 14.0% for females.

The final series of variables entered into the regression equation included additional measures of direct experience, more specifically, experience smoking, drinking, using marijuana, and other drugs. The addition of these variables increased the total variance accounted for to 27.3% for males and 23.3% for females. While the addition of these variables did not significantly alter the predictive value of the variables from the previous model for females, some changes did occur for males. The value of level of closeness to friends was suppressed until the addition of variables concerning involvement with smoking, drinking, and drugs. The addition of these variables accounted for a significant percentage of the variance concerning age of first sexual intercourse for both males and females. However, it is important to note that while females who smoked engaged in sexual intercourse at a younger age, it appears that it was primarily the missing value indicator for drinking that was the strongest predictor for males, indicating that males who did not answer this question were at a greater likelihood to postpone sexual intercourse.

Although a weak relationship exists between the predictors and criterion variables, the model is statistically significant, allowing for further interpretation of the results. For females, progress through puberty had the most effect on age of first sexual intercourse. In comparison, the missing value indicator for experience drinking was the



strongest predictor for males. The next strongest predictor for females was experience smoking. For males, the missing value indicator for closeness to parents was the second strongest predictor. Adolescent females who scored higher on the closeness to parents scale, as well as those who were not as far along in their pubertal development, and those who did not smoke, together with those who did not reside in Quebec, the Prairies, or British Columbia and whose families had lower incomes were more likely to engage in sexual intercourse at a later age than adolescent females without these characteristics. Similarly, males who did not reside in Quebec, the Prairies, or British Columbia, whose families had lower incomes, along with males who had more distant relationships with their friends, and those males who were not as far along in pubertal development, were more likely to engage in sexual intercourse at later ages than adolescents who did not share these characteristics.

*Hypothesis 2: Experiences Become Cumulatively More Advanced With Age*

Hypothesis 2 stated that adolescents who were more experienced in terms of sexual expression at 12-13 years of age would be more experienced at 14-15 years of age, and at 16-17 years of age. Three logistic regression models were used to test hypothesis 2.

The first model examined the predictive value of level of sexual experience at 12-13 years of age (Cycle 2) and experience with a boy/girlfriend at 14-15 years of age (Cycle 3) for having engaged in sexual intercourse by 16-17 years of age (Cycle 4). The odds of engaging in intercourse at 16-17 years of age increased by 9.78 between those with the least sexual experience and those with the most sexual experience at 12-13 years

of age<sup>7</sup> (see Table 13). Likewise, experience with a boy/girlfriend was a significant predictor (OR = 5.15) of engagement in sexual intercourse by 16-17 years of age. Caution must be utilized in the present interpretation because of the missing value indicator for experience with a boy/girlfriend at 14-15 years of age. Respondents who did not report their experience or lack thereof with a boy/girlfriend were 6.44 times more likely to engage in sexual intercourse at 16-17 years of age.

The second model investigated the predictive value of the sexual experience scale at 12-13 years of age with the criterion variable of experience with a boy/girlfriend at 14-15 years of age. The odds of having a boyfriend or girlfriend at 14-15 years of age increased by 6.42 between those with the least sexual experience and those with the most sexual experience at 12-13 years of age<sup>8</sup> (see Table 13). However, the missing value indicator for level of sexual experience was also significant, indicating that those who reported their level of sexual experience were less likely to engage in sexual intercourse than those who did not answer these questions.

The final model examined how an adolescent's level of sexual experience at 12-13 years of age, as measured by the sexual experience scale was related to whether or not an individual had engaged in sexual intercourse at 14-15 years of age. Results indicated the odds of engaging in sexual intercourse at 14-15 years of age increased with greater experience at 12-13 years of age to the point where they were 27.1 times higher for those who had participated in sexual intercourse, i.e. the most sexual experience on the scale, at 12-13 years of age compared to those with the least experience<sup>9</sup>.

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<sup>7</sup> The highest value on the scale is 6. Odds at 6 were calculated as  $\ln \exp (6 \times .38) = 9.78$

<sup>8</sup> The highest value on the scale is 6. Odds at 6 were calculated as  $\ln \exp (6 \times .31) = 6.42$

<sup>9</sup> The highest value on the scale is 6. Odds at 6 were calculated as  $\ln \exp (6 \times .55) = 27.11$

## Discussion and Conclusions

The present investigation approached adolescent sexual activity as a learned behaviour and used indicators of learning through direct experience and observation from social learning theory to create a model for explaining sexual activity among Canadian youth. Data from the NLSCY were used to examine the effects of indicators of learning on whether adolescent males and females reported engaging in sexual intercourse, age at which they initiated sexual intercourse, and the progressive nature of sexual activity. Results of both the logistic regression of ever having engaged in sexual intercourse and the ordinary least squares (OLS) regression of age at first intercourse support the conclusion that both direct experience and observation contribute to predicting engagement in sexual intercourse by adolescents; however, there were some differences for the two age groups (i.e., 12-15 years and 16-17 years) and some differences based on gender.

Puberty is one of the more obvious developmental changes that affect adolescents' sexuality. In the present investigation, completion of puberty predicted sexual intercourse for 12-15 year old males and females; however examination of the older age group of 16-17 year olds revealed that completion of puberty significantly influenced males but not females. A possible explanation for the influence of completion of puberty for younger adolescents but not older female adolescents could be that sexual maturation is influential during the ages when some adolescents have completed their pubertal development while others, approximately the same age, have not yet started. Females tend to begin and complete puberty before their male counterparts. In Canada, females begin puberty around 10.5 years and complete puberty at approximately 15 years

of age (males tend to be approximately 1.5 to 2 years later, Dryburgh, 2000). Thus, by 16-17 years of age there could be little variation between females concerning puberty development because most females have biologically matured, and therefore puberty is not a significant predictor for 16-17 year old adolescent females. This is in accordance with Zabin, Smith, Hirsch, and Hardy (1986) who found that the timing of sexual maturation was salient only for those adolescents who began puberty early in comparison to their age mates. Furthermore, Zabin et al. (1986) reported that the effect of puberty diminished with the age of the adolescent.

Results of the OLS regression analyses indicated that puberty was a significant predictor of age of first sexual intercourse for males and females. Examination of the correlation matrix (see Table 6) revealed a moderate to strong positive correlation between age and puberty. Also, there was a moderate positive correlation between age and engaging in sexual intercourse. Based upon these correlations, it is possible that puberty may actually be acting as a stand-in for age, which would suggest that older adolescents reported an older age of first sexual intercourse. In order to identify the true relationship between puberty and age of first sexual intercourse more analyses are required.

Direct experience of having a boy/girlfriend was a strong predictor of sexual intercourse for females and males in both age groups, although its effect was stronger for females. It did not, however, contribute to predicting age of first intercourse. Marin et al. (2000) reported that having a boy/girlfriend was a stronger predictor of early sexual activity for females than for males. A possible reason why experience with a boy/girlfriend was more influential for females than males could be, that as suggested by

Wilson and Medora (1990), females tend to place more emphasis on the quality of their relationship before intercourse occurs than males. Thus, females perceive having a relationship prior to engaging in sexual intercourse as important. Tolman (2002) commented on females experiencing sexual desire within “the sanctioned and safe space of a long-term monogamous heterosexual relationship” (p. 122). Such relationships provide adolescent females with a social and emotional space for experiencing their sexuality while simultaneously supporting the institution of heterosexuality. However, adolescent females’ sexual ‘freedom’ is restricted because heterosexuality delimits what kinds of desire are acceptable for females (Tolman, 2002). Interestingly however, experience having a boy/girlfriend did not significantly predict age of first sexual intercourse for males or females. One possible suggestion for this could be that individuals included in the regression analysis (OLS regression) for predicting age of first sexual intercourse were all involved in boy/girlfriend relationships and therefore there was little variation in this variable. If experience with a boy/girlfriend was a significant predictor of age of first sexual intercourse it is expected that adolescents who had experience with a boy/girlfriend would engage in sexual intercourse at a younger age than adolescents without this experience.

While experience with a boy/girlfriend increased the likelihood of an adolescent engaging in sexual intercourse, having a close relationship with parents insulated both males and females at 12-15 years and 16-17 years of age from engaging in sex. As far as predicting age of first intercourse, level of closeness to parents significantly predicted age for females but not males. These findings are congruent with previous research that documented the protective value of a close relationship with parents for postponing

adolescent engagement in sexual intercourse (Santelli et al., 2004; Guo et al., 2002; Williams, Cox, Hedberg, & Deci, 2000). Females who were closer to their parents engaged in sexual intercourse at a later age than females who were not close to their parents. This finding lends support to the work of Wyatt (1989) who found that adolescent females, who reported that their parents were more influential than their adolescent peers, were more likely to have a later age of onset of sexual intercourse. Social learning theory provides a possible explanation for why adolescent females, who report being close to their parents, postpone sexual intercourse. Social learning theory, suggests that adolescents identify with and imitate models of their own sex (Bandura, 1977). Generally mothers are considered the agents of sexual socialization, and as such, female adolescents tend to model their mothers. Inazu and Fox (1980) found that the quality of the mother-daughter relationship was the strongest predictor of the daughter's sexual experience. A positive mother-daughter relationship was negatively correlated with the daughter's likelihood of engaging in sexual intercourse at a young age. As previously mentioned, level of closeness to parents was not a significant predictor for males; however, the missing value indicator for level of closeness to parents was significant. This suggests that males who refused to answer questions pertaining to level of closeness to parents engaged in sexual intercourse at a younger age.

Related to adolescents' relationships with their parents is level of parental monitoring. The only group for which level of parental monitoring had an effect was 16-17 year old males'. Males 16-17 years of age who indicated that they experienced low levels of parental monitoring were at greater odds of engaging in sexual intercourse. This is congruent with the findings of French and Dishion (2003) who found that low levels of

parental monitoring were associated with early initiation of sexual intercourse. High levels of parental monitoring were associated with parents being heavily involved with their children, being aware of their whereabouts, companions, and activities. Given the results of the present study which suggest that level of closeness to parents was a significant predictor for delay of sexual intercourse, it is possible that parental monitoring was suppressed because of the influence of level of closeness to parents.

Level of closeness to peers revealed a pattern similar to that of level of closeness to parents but in a different direction. Level of closeness to peers increased the odds of intercourse for 12-15 year old males but not females and for 16-17 year old males and females. There is an abundance of literature that documents the influence of peers on adolescent sexual intercourse (DiIorio et al., 1999; Whitbeck et al., 1999). Wyatt (1989) stated that when peers are adolescents' primary reference group, adolescents are more likely to have premarital sexual intercourse than when parents are their primary reference.

Interestingly and in contrast with previous literature, level of closeness to peers delayed age of intercourse for males. Males who reported a close relationship with their peers engaged in sexual intercourse at a later age than males who did not have a close relationship with their peers. This finding is contrary to studies that have documented peer influence as a predictor of early onset of sexual activity (Whitbeck et al., 1999). Jessor and Jessor (1977) found that adolescents who had greater peer than parental identification, especially when peers modeled and supported non-conventional behavior, were more prone to engage in health-compromising behavior. While the influence of association with what Jessor and Jessor label "deviant peers" on early intercourse is well

documented, it appears that less is known about other kinds of peer influence including peer influence to postpone sexual intercourse (Whitbeck et al., 1999; Perry, Kelder, & Komro, 1993). According to social learning theory, learning through observation is effective when valued role models are observed and then imitated. Given this study's finding concerning the influence of peers on older age of sexual intercourse for males, it is possible that males are identifying with the behaviors and skill sets demonstrated by their peers who may also be postponing sexual intercourse until a later age (Bandura, 1977). More research is needed in this area to determine the exact influence of peers' sexual attitudes and behaviors on adolescent sexual intercourse.

Social learning theory insists that learning through direct experience is contingent upon rewards and punishments for behavior that is instinctively displayed or for the use of existing skill sets. Level of commitment to school was used as an indicator of direct experience in the present investigation. The expectation was that commitment would wane with a shift to participation in sexual intercourse. Results indicated that commitment to school influenced sexual intercourse for 12-15 year old and 16-17 year old females but did not significantly influence males in either age category. Females who had the highest levels of commitment to school were at a low likelihood of engaging in sexual intercourse. This is consistent with Handler (1990) who found that high educational aspirations were associated with low levels of sexual activity during adolescence. Wyatt (1989) found that women with more years of education reported a later age of first sexual intercourse. A possible explanation for the discrepancy between males and females concerning level of commitment to school could be that participation in sexual intercourse could result in pregnancy for females, thus potentially jeopardizing



their future aspirations. However, this explanation is dependent upon our current socio-cultural norms and values which place an emphasis upon pregnancy as essential to a woman's identity.

The influence of smoking, drinking, and drugs had a significant influence on engagement on sexual intercourse for 12-15 year old and 16-17 year old males and females; however the effect was less pronounced for predicting age of first sexual intercourse. Smoking and marijuana use significantly predicted sexual intercourse for 12-15 year old females, while cigarette smoking and use of other drugs significantly predicted intercourse for 16-17 year old females. Males in both age groups, who had experience smoking and using marijuana, were more likely to engage to sexual intercourse. In addition, drinking was significantly related to sexual intercourse for males 12-15 years of age. These results are consistent with numerous studies that have documented the relationship between substance use and sexual intercourse (Harris, Duncan, & Boisjoly, 2002; Paul et al., 2000). Guo et al. (2002) found that substance use by adolescents increased the likelihood of sexual behavior, suggesting that because of the nature of sexual relationships (i.e., requiring the presence of a partner) moderate substance use reduced inhibitions perhaps altering the dynamics of adolescent sexual relationships and/or impairing judgment. Another possible explanation for such findings could be that experience with smoking, drinking, and drugs are indicative of behaviors that are more adult-like and are therefore associated with growing up. Whitbeck et al. (1993) suggested that the emergence of one type of adult like behavior increases the likelihood of adolescents engaging in other forms of adult-like behavior. Therefore, this

could potentially explain the relationship between involvement with smoking, drinking, and drugs and participation in sexual intercourse.

The OLS regression results suggest that experience smoking was related to female (but not male) adolescents engaging in sexual intercourse at an earlier age than adolescent females who did not smoke. This finding lends support to the work of Resnick et al. (1997) who found that adolescents who smoked were more likely to engage in early sexual intercourse. While experience smoking was not a significant predictor of age of onset of sexual intercourse for males, the missing value indicator for experience drinking was significant in predicting age of sexual intercourse for males. Results suggested that males who refused to reveal their experience with alcohol were more likely to engage in sexual intercourse at a younger age. While it can not be concluded that those who chose not to answer this question had experience with alcohol, research suggests that alcohol consumption tends to increase the likelihood of sexual activity (Paul et al., 2000). Research and reviews of research conducted by The Alan Guttmacher Institute (1994) suggested that adolescents who use tobacco, alcohol, and/or other drugs were more likely to engage in sexual activity than those who refrained from using such substances. Tobacco and alcohol may be used by adolescents for a number of reasons including that they provide the adolescent with the opportunity to challenge authority, demonstrate autonomy, enter into a peer group, show they are grown-up, or simply to relieve the stresses of growing up. Social learning theory would suggest that adolescents use alcohol and tobacco as an integral part of adult role playing and as a rite of passage into the adult community (Halebsky, 1987).

The addition of the cluster of variables pertaining to involvement with smoking, drinking, and drugs affected many of the other indicators of direct experience and observation previously discussed. In many cases the addition of the cluster of variables resulted in indicators of direct experience and observation failing to maintain their significance. This is suggestive that indicators of direct experience and observation influence smoking, drinking, and drug use; however the present study did not attempt to determine if the cluster of smoking, drinking, and drugs was an intervening or mediating variable between the indicators of direct experience and observation and sexual intercourse.

The influence of parental status at birth of child was examined for its influence on adolescent engagement in sexual intercourse. Results indicated that females 12-15 years of age were at increased odds of engaging in sexual intercourse if at least one of their parents was a teenager (i.e., less than 20 years of age) at the birth of the child. Most research reveals that parents are an important source of transmission of values and attitudes, indicating that parents have an influence on adolescents' attitudes and behavior, especially by way of example as documented by learning through observation (Bandura, 1977). Thornton and Camburn (1989) noted that parents who possess liberal attitudes concerning premarital sexual intercourse are more likely to have adolescents who are liberal in their attitudes and behavior. Therefore, it is suggestive that individuals who become parents in their teen years hold more liberal attitudes and then serve as role models for their children. In the present investigation the gender of the parent who was teenage was not identified, however if the parent was in fact the mother, this could explain why teen status of at least one parent influenced young adolescent females more

than their male counterparts. Newcomer and Udry (1984) found that mother's attitudes and standards of behavior when they were adolescents are especially influential in forming their offspring's attitudes.

The influence of socio-demographic characteristics, after controlling for learning effects indicated that region had a significant influence on engagement in sexual intercourse for females in both age categories and for males 16-17 years of age. Females 12-15 years of age who resided in the Atlantic Provinces were more likely to engage in sexual intercourse than females residing in other regions of Canada. However, by the time female adolescents turned 16-17 years of age, Quebec was the only region that retained significance. In comparison, the only regional influence on males occurred for males 16-17 years of age, wherein males from the Prairies were less likely to report intercourse than 16-17 year old males from other parts of Canada. Traditionally, individuals residing in Quebec are conceptualized as having more liberal attitudes. Numerous researchers have commented on the strong correlation between a high level of sexual and social liberalism and a high level of sexual permissiveness (Whitbeck et al., 1999; Thornton & Camburn, 1989). More research is necessary in order to fully examine the relationship between region and engagement in sexual intercourse.

In addition to examining the effects of indicators of learning on whether adolescent males and females reported engaging in sexual intercourse and the age at which they did so, the present investigation also investigated the progressive nature of sexual activity. The hypothesis that sexual activity, as an adult role that adolescents assume, is cumulative and progressive in nature was tested. Results of the analyses support the conclusion that on average, sexual intercourse at 16-17 years of age (Cycle 4)

can be predicted by experience with a boy/girlfriend at 14-15 years of age and level of sexual experience at 12-13 years of age (Cycle 2). Similarly, sexual intercourse at 14-15 years (Cycle 3) can be predicted by level of sexual experience at 12-13 years of age (Cycle 2). Jakobsen (1997) reported a temporal ordering of sexual behavior that commences in early adolescents with dating, going steady, embracing and kissing, progresses to fondling above the waist and below the waist, and terminates with sexual intercourse. Similar to the present study, Jakobsen (1997) concluded that there is a cumulative component to adolescent sexual relationships. These findings are congruent with social learning theory which supports this cumulative and progressive trend in sexual behavior while acknowledging the relevance of socio-cultural influences. Socio-cultural influences dictate adolescent sexual progression and therefore this progression is malleable. Furthermore, such a progression is not a biological or a 'natural' progression, rather it is scripted, and as such is highly fluid and dependent upon the given socio-cultural context.

#### *Limitations and Suggestions for Future Research*

A major limitation of the present study relates to the use of secondary data. The NLSCY was created with the intention of documenting the characteristics and life expectancies of children and youth in Canada, and as such, the survey was not specifically designed to test the hypotheses of the current study. This created challenges for this investigation. In particular, it was difficult to compare adolescents of the various age groups to one another (i.e., 12-13 year olds to 14-15 year olds to 16-17 year olds) because the survey questions were altered in order for the survey to remain age appropriate. The altering of survey questions also greatly complicated and limited the

possibility of extensive longitudinal examination particularly with regards to examination of adolescent sexual relationships. The series of items that were asked of 12-13 year olds, which composed the sexual experience scale in the present study were valuable for examining the most common forms of adolescent sexual expression, however it would have been beneficial if this same series of questions were requested from 14-15 year olds and 16-17 year olds. This would have permitted a more accurate description concerning the cumulative nature of adolescent sexual relationships as outlined by Reiss (1986) and Jakobsen (1997).

The present study suggested that the cluster of variables pertaining to adolescent involvement with smoking, drinking, and use of drugs influenced involvement in sexual intercourse, as well as indirectly influenced many of the other indicators of direct experience and observation. More specifically, some indicators of direct experience and observation lost statistical significance once the smoking, drinking, and use of drugs variables were added. This suggests that the cluster of variables including smoking, drinking, and drugs were accounting for some of the variance previously accounted for by the indicators of direct experience and observation. Future research is needed to identify the mechanisms utilized by adolescents who indulge in this cluster of variables yet refrain from sexual intercourse. If future cycles of the NLSCY ensure that variables are measured in the same way across time a more holistic model of adolescent sexual relationships, including sexual intercourse can be constructed. In addition, future cycles of the NLSCY should attempt to acknowledge and account for heterosexual bias. To reiterate, literature pertaining to the NLSCY stated that only heterosexual individuals were included in the sample, however there is no documentation for how this was

determined; thus future cycles should attempt to eradicate heterosexual bias by providing adolescents' with alternative responses to the heterosexual norm.

The NLSCY was comprehensive in its survey of topics; hence, it was possible to extract measures for the purpose of the present investigation. However, it is important to note that the indicators used in this investigation were imperfect measures thus affecting the accuracy of the findings. The large amount of missing data also threatened the generalizability of the findings. To control for the influence of missing data, missing value indicators were created for each variable and where these had a significant influence on the dependent variable, they were retained in the analysis. While this controlled for the effect of missing data, it limited the possibility of drawing definitive conclusions about the influence of indicators on engagement in sexual intercourse. Instead, the results of the present analyses are merely suggestive of how various indicators of direct experience and observation may influence adolescent engagement in sexual intercourse.

The sample composition, more specifically, the racial and socio-economic makeup of the respondents precluded generalization of the results of the present study to other populations. Although the NLSCY included socio-demographic information, certain groups of individuals tended to be less likely to respond to the survey than others. More specifically, the probability of participation was lower among minority and lower income individuals. The majority of respondents in the current investigation were Caucasian (87.4%) and were classified as belonging to upper middle or highest levels of income (67.7%). While the racial composition of the sample closely approximated that of Canada, the financial profile did not. In both cases, however, any race and income

effects may be underestimated. Furthermore, the NLSCY did not collect data on individuals living in the Northwest Territories, children living in institutions, or individuals living on Native Reserves. It is important that the results of the present study not be generalized to such individuals because their experiences may be very different than those documented in this analysis.

It is also reasonable to assume that there were potential measurement challenges including cognitive difficulties, social desirability bias, and concerns about confidentiality. Younger adolescents may have had difficulty comprehending and responding to questions beyond their experiences (e.g., adolescent who did not have a boy/girlfriend were asked to report on experiences with a boy/girlfriend). Also, female adolescents may have found the question “How often have you petted above the waist?” not applicable to their experiences. Efforts were made by Statistics Canada personnel to use simple and familiar language and to provide reassurance about confidentiality to respondents; however these efforts may not have been sufficient for all individuals. This may, in fact, have influenced the high non-response rate.

Several measures utilized in the present investigation were dichotomized into either having experience with a particular behavior or not having experience. By dichotomizing the variables, some important information about the respondents’ behavior was lost. The collapsing of variables essentially reduced the standard deviation of each variable, consequently limiting the amount of variance that can be explained by indicators of social learning theory.

A final limitation of the present study concerns the distinction between consensual and forced sexual intercourse. Prior to Cycle 4, no questions pertaining to



sexual intercourse differentiated between voluntary and forced intercourse. The issue of “consensual sexual intercourse” was only introduced in Cycle 4 and only for respondents 16-17 years of age. This, coupled with previous literature that documents the pervasiveness of sexual coercion, wherein sexual activity occurs in situations of pressure or power differences between partners, suggests that it is important to distinguish between forced and consensual intercourse (Marin et al., 2000; Driscoll, Moore, & Lindberg, 1997; Rosenfeld & Lewis, 1993). Tolman (2002) reports that a considerable proportion of women’s first sexual experiences are coerced and stated that the younger a female is when she engages in sexual intercourse, the more likely that she will experience sexual coercion.

Future research is required to trace the effects of social learning theory indicators on adolescent engagement in sexual intercourse for an ethnically diverse sample, as well as for individuals in non-heterosexual relationships. Various socioeconomic groups, culturally diverse groups, and individuals of different sexual orientations may have unique trajectories as they progress towards adulthood and sexual relationships. Future research ought to explore the sexual relationship trajectories of those diverse groups and the factors that influence their progress in sexual relationships. Although this study found many similarities between males and females, as illustrated in the cross-sectional analyses, future research should examine if there are any gender differences longitudinally. In addition, future research should explore some of the relationships that were beyond the scope of this investigation including examination of how puberty, age, and sexual intercourse intersect, a more detailed inquiry of how peers’ attitudes and behaviors influence an adolescent’s decision to engage in or postpone sexual intercourse,

and some attention should be devoted towards determining why adolescents from particular regions of Canada engage in sexual intercourse earlier or later than others.

This investigation revealed an interesting relationship between many of the indicators of direct experience and observation and the cluster of variables related to smoking, drinking, and drugs on engagement in sexual intercourse. The present study was unable to determine if the cluster of variables were intervening or mediating variables. It would be beneficial if future research attempted to clarify this relationship. Finally, future researchers may wish to explore how sex is perceived by adolescents. With numerous adolescents engaging in sexual intercourse during their teen years it is important to determine the meaning attached to such relationships for adolescents. While the present study does not differentiate between beneficial and detrimental aspects of sexual intimacy in adolescence, it is helpful to policymakers, parents, and educators in meeting challenges to identify behavior that is unacceptable because of the long term consequences that are potentially harmful to health and well-being.

## References

- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall Inc.
- Blum, R.W., Beuhring, T., Rinehart, P.M. (2000). Protecting teens: Beyond race, income and family structure. *American Journal of Public Health, 12*, 1-33.
- Carvajal, S.C., Parcel, G.S., Basen-Engquist, K., Banspach, S.W., Coyle, K.K., Kirby, D., & Chan, W. (1999). Psychosocial predictors of delay of first sexual intercourse by adolescents. *Health Psychology, 18*(5), 443-452.
- Crawford, M.; & Popp, D. (2003). Sexual double standards: A review and methodological critique of two decades of research. *Journal of Sex Research, 40*, 1-24.
- Dick, D.M., Rose, R.J., Pulkkinen, L., & Kaprio, J. (2001). Measuring puberty and understanding its impact: A longitudinal study of adolescent twins. *Journal of Youth and Adolescence, 30*(4), 385-399.
- DiIorio, C., Kelley, M., Hockenberry-Eaton, M. (1999). Communication about sexual issues: Mothers, fathers, and friends. *Journal of Adolescent Health, 24*, 181-189.
- Driscoll, A.K., Moore, K.A., & Lindberg, L.D. (1997). White paper: A statistical portrait of adolescent sex, contraception and childbearing. Washington, DC: The National Campaign to Prevent Teen Pregnancy.
- Dryburgh, H. (2000). Teenage pregnancy. *Health Reports, 12*(1), Statistics Canada, Catalogue 82-003.
- Fredrickson, B.L.; & Roberts, T. (1997). Objectification theory: Toward understanding women's lived experiences and mental health risks. *Psychology of Women Quarterly, 21*, 173-206.
- French, D.C., & Dishion, T.J. (2003). Predictors of early initiation of sexual intercourse among high-risk adolescents. *Journal of Early Adolescents, 23*(3), 295-315.
- Goodson, P., Evans, A., & Edmundson, E. (1997). Female adolescents and onset of sexual intercourse: A theory-based review of research from 1984-1994. *Journal of Adolescent Health, 21*, 147-156.
- Guo, J., Chung, I-J., Hill, K.G., Hawkins, J.D., Catalano, R.F., & Abbott, R.D. (2002). Developmental relationships between adolescent substance use and risky sexual behavior in young adulthood. *Journal of Adolescent Health, 31*, 354-362.
- Halebsky, M.A. (1987). Adolescent alcohol and substance abuse: Parent and peer effects. *Adolescence, 22*, 961-967.

- Handler, A. (1990). The correlates of the initiation of sexual intercourse among young urban Black females. *Journal of Youth and Adolescents*, 19, 159-170.
- Harris, K.M., Duncan, G.J., & Boisjoly, J. (2002). Evaluating the role of "nothing to lose" attitudes on risky behavior in adolescence. *Social Forces*, 80(3), 1005-1039.
- Human Resources Development Canada (1996). National Longitudinal Survey of Children and Youth (NLSCY): Overview report. Evaluation and Data Development Strategic Policy. Statistics Canada.
- Inazu, J.K., & Fox, G.L. (1980). Maternal influence on the sexual behavior of teen-age daughters. *Journal of Family Issues*, 1, 81-102.
- Jakobsen, R. (1997). Stages of progression in noncoital sexual interactions among young adolescents: An application of the Mokken Scale analysis. *International Journal of Behavioral Development*, 21(3), 537-553.
- Jessor, R., & Jessor, S.L. (1977). *Problem behavior and psychosocial development. A Longitudinal Study of Youth*. New York: Academic Press.
- Kirby, D. (1999). Reflections on two decades of research on teen sexual behavior and pregnancy. *The Journal of School Health*, 69(3), 89-94.
- Lammers, C., Ireland, M., Resnick, M., & Blum, R. (1999). Influences on adolescents' decision to postpone onset of sexual intercourse: A survival analysis of virginity among youths aged 13 to 18 years. *Journal of Adolescent Health*, 26, 42-48.
- Lees, S. (1989). Learning to love. In M. Cain (ed.), *Growing up good*, (pp. 19-37). Newbury Park, CA: Sage Publications.
- Marcil-Gratton, N. (1998). *Growing up with mom and dad? The intricate family life courses of Canadian children* (Statistics Canada/HRDC Publication No. 89-566-XIE). Ottawa, ON: Minister of Industry.
- Marin, B.V.; Coyle, K.K.; Gomez, C.A.; Carvajal, S.C.; & Kirby, D.B. (2000). Older boyfriends and girlfriends increase risk of sexual initiation in young adolescents. *Journal of Adolescent Health*, 27, 409-418.
- Maticka-Tyndale, E. (2001). Sexual health and Canadian youth: How to we measure up? *The Canadian Journal of Human Sexuality*, 10(1), 1-17.
- Mewhinney, D.M., Herold, E.S., & Maticka-Tyndale, E. (1995). Sexual scripts and risk-taking of Canadian university students on spring break in Daytona Beach, Florida. *The Canadian Journal of Human Sexuality*, 4(4), 273-288.

- Muuss, R.E. (1976). The implications of social learning theory for an understanding of adolescent development. *Adolescence, 11*(41), 61-85).
- Nangle, D.W.; & Hansen, D.J. (1998). Adolescent heterosocial competence revisited: Implications of an expanded conceptualization for the prevention of high-risk sexual interactions. *Education and Treatment of Children, 21*(4), 431-446.
- Newcomer, S.F., & Udry, J.R. (1984). Mother's influence on the sexual behavior of their teenage children. *Journal of Marriage and Family, 46*, 477-485.
- Patrick, D.M., Wong, T., & Jordan, R.A. (2000). Sexually transmitted infections in Canada: Recent resurgence threatens National goals. *The Canadian Journal of Human Sexuality, 9*(3), 149-165.
- Paul E.L., McManus, B., & Hayes, A. (2000). "Hookups": Characteristics and correlates of college students' spontaneous and anonymous sexual experiences. *The Journal of Sex Research, 37*(1), 76-88.
- Perry, C.L., Kelder, S.H., & Komro, K.A. (1993). The social world of adolescents: Family, peers, schools, and the community. In *Promoting the health of adolescents*, eds. S.G. Millstein, A.C. Petersen, E.O. Nightingale, pp. 73-96. New York: Oxford University Press.
- Pilon, M. (2001). Canada's legal age of consent to sexual activity. Law and Government Division; Parliamentary Information and Research Service. Retrieved January 4<sup>th</sup>, 2005 from [http://www.parl.gc.ca/information/library/PRBpubs/prb993-e.htm#CURRENT%20LAW\(TXT\)](http://www.parl.gc.ca/information/library/PRBpubs/prb993-e.htm#CURRENT%20LAW(TXT)).
- Polit, D.F., & Hungler, B.P. (2004). *Nursing research: Principles and methods, 4<sup>th</sup> ed.*, J.B. Lippincott Co., New York.
- Reiss, I.L. (1986). A sociological journey into sexuality. *Journal of Marriage and the*

*Family*, 48(2), 233-242.

Resnick, M.D., Bearman, P., Blum, R., Bauman, K.E., Harris, K.M., Jones, J., Tabor, J., Beuhring, K.E., Sieving, R.E., Shew, M., Ireland, M., Bearinger, L., & Udry, R. (1997). Protecting adolescents from harm: Findings from the National Longitudinal Study of Adolescent Health, *Journal of the American Medical Association*, 278(10), 823-831.

Rosenfeld, S., & Lewis, D. (1993). The hidden effect of childhood sexual abuse on adolescent and young adult HIV prevention: Rethinking AIDS education, program development, and policy. *AIDS Public Policy Journal*, 8, 181-186.

Santelli, J.S., Kaiser, J., Hirsch, L., Radosh, A., Simkin, L., & Middlestadt, S. (2004). Initiation of sexual intercourse among middle school adolescents: The influence of psychosocial factors. *Journal of Adolescent Health*, 34, 200-208.

The Alan Guttmacher Institute. (1994). *Sex and America's teenagers*. The Alan Guttmacher Institute. New York, NY.

Thornton, A., & Camburn, D. (1989). Religious participation and adolescent sexual behavior and attitudes. *Journal of Marriage and the Family*, 51, 641-653.

Tolman, T.L. (2002). *Dilemmas of desire*. Cambridge, MA: Harvard University Press.

Tolman, T.L. (1994). Doing desire: Adolescent girl's struggles for/with sexuality. *Gender and Society*, 8(3), 324-342.

Whitbeck, L.B., Conger, R.D., Simons, R.L., & Kao, M-Y. (1993). Minor deviant behaviors and adolescent sexual activity. *Youth & Society*, 25, 24-37.

Whitbeck, L.B., Yoder, K.A., Hoyt, D.R., & Conger, R.D. (1999). Early adolescent sexual activity: A developmental study. *Journal of Marriage and the Family*, 61(4), 934-946.

Williams, G.C., Cox, E.M., Hedberg, V.A., & Deci, E.L. (2000). Extrinsic life goals and health-risk behaviors in adolescents. *Journal of Applied Social Psychology*, 30(8), 1756-1771.

- Wilson, P.M., & Medora, N.P. (1990). Gender comparisons of college students' attitudes toward sexual behavior. *Adolescence*, 25, 615-627.
- Wyatt, G.E. (1989). Reexamining factors predicting Afro-American and White American women's age at first coitus. *Archives of Sexual Behavior*, 18(4), 271-298.
- Zabin, L., Smith, E., Hirsch, M., & Hardy, J. (1986). Ages of physical maturation and First intercourse in Black teenage males and females. *Demography*, 23, 595-605.

## Appendix

Table 1: Cronbach Alpha Levels for Scales from the NLSCY

Scale Name	Cronbach $\alpha$	# of Items	Minimum Score	Maximum Score
Closeness to Parents	.83	8	0	16
Puberty Female	.62	2	0	6
Puberty Male	.76	2	0	6
Parental Monitoring 12-15 year olds	.67	4	0	16
Parental Monitoring 16-17 year olds	.79	4	0	16
Commitment to School 12-15 year olds	.74	7	0	21
Commitment to School 16-17 year olds	.73	4	0	16
Presence of Close Friends	.78	4	0	16



Table 2: Sample Profile-Socio-demographic Characteristics

<b>Variables</b>	<b>Percent of Males 2867</b>	<b>Percent of Females 2714</b>	<b>Chi-Square Value</b>	<b>T Value</b>
<b>N<sup>10</sup></b>				
<b>Socio-demographic Characteristics</b>				
<i>Income Adequacy (N)</i>	(2867)	(2714)		
Low & Lower Middle	6.3	7.1	2.03	---
Middle	26.0	25.2		
Upper Middle	35.5	34.8		
High	32.2	32.8		
<i>Region of Residence (N)</i>	(2867)	(2714)		
Atlantic	7.9	7.9	.02	---
Quebec	22.0	22.1		
Ontario	38.2	38.1		
Prairies	18.8	18.9		
British Columbia	13.1	13.0		
<i>PMK Years of Education(N)</i>	(2763)	(2595)		
9 Years or Less	5.2	5.8	25.40**	---
10 Years	4.6	5.3		
11 Years	10.5	7.7		
12 Years	34.2	38.3		
13 Years	20.9	21.5		
14 Years	5.8	4.3		
16 Years	14.9	13.8		
18 Years or More	3.9	3.4		
**significant at the $p \leq .01$				

<sup>10</sup> The difference between N's reported with each variable and the total N represents the number of missing values for each variable

Table 3: Sample Profile-Indicators of Direct Experience

Variables N <sup>11</sup>	Percent of Males 2867	Percent of Females 2714	Chi-Square Value	T Value
<b>Indicators of Direct Experience</b>				
<i>Measure of Relationship Experience</i>				
(N)	(2035)	(2021)		
Experience Boy/Girlfriend	63.8	64.3	.13	---
<i>Involvement with Smoking, Drinking, and Drugs</i>				
<i>Smoking (N)</i>	(2089)	(2116)		
Experience Smoking	21.7	29.5	33.47**	---
<i>Drinking (N)</i>	(2075)	(2119)		
Experience Drinking	48.3	52.1	6.23*	---
<i>Smoking Marijuana (N)</i>	(2107)	(2124)		
Experience Marijuana	30.2	31.0	.35	---
<i>Other Drugs (N)</i>	(2096)	(2099)		
Have Done Other Drugs	14.9	14.8	.02	---
<i>Puberty</i>				
Mean	3.75	4.72	---	-32.24***
<i>Commitment to School 12-15</i>				
Mean	15.23	15.77	---	-5.80***
<i>Commitment to School 16-17</i>				
Mean	14.94	15.61	---	-4.84***
* significant at the $p \leq .05$ level				
**significant at the $p \leq .01$ level				
*** significant at the $p \leq .001$ level				

<sup>11</sup> The difference between N's reported with each variable and the total N represents the number of missing values for each variable

Table 4: Longitudinal Sample Profile Examining Experience at 12-13 years (Cycle 2), with Experience at 14-15 years (Cycle 3), with Experience at 16-17 years (Cycle 4)

<b>Variables</b> <b>N responding to survey*</b>	<b>Percent Males</b> <b>874</b>	<b>Percent Females</b> <b>910</b>
<i>Cycle 2 (12-13 year olds)</i>		
<i>Holding Hands</i> Have held hands	55.3	53.5
<i>Hugging</i> Have hugged	53.9	54.8
<i>Kissing</i> Have kissed	47.0	44.7
<i>Petting above the waist</i> Have pet above the waist	27.6	19.7
<i>Petting below the waist</i> Have pet below the waist	20.8	12.8
<i>Sexual Intercourse</i> Had sexual intercourse	5.0	2.0
<i>Cycle 3 (14-15 year olds)</i>		
<i>Sexual Intercourse</i> Had sexual intercourse	9.4	14.1
<i>Relationship Experience</i> Experience with a boy/girlfriend	69.3	70.1
<i>Cycle 4 (16-17 year olds)</i>		
<i>Sexual Intercourse</i> Had sexual intercourse	35.3	45.1

\* Percentages are based on the weighted sample that responded to each question.

Table 5: Sample Profile-Indicators of Observational Learning

Variables	Percent of Males 2867	Percent of Females 2714	Chi-Square Value	T Value
N <sup>12</sup>				
<b>Indicators of Observational Learning</b>				
<i>Status of Household (N)</i>	(1701)	(1719)		
Not a 2 Parent Household	33.7	38.7	9.45**	---
<i>Teen Status of Parents at Birth of Child (N)</i>	(2865)	(2716)		
At Least one Teenage Parent	2.8	3.6	153.57**	---
Unknown, one parent post teen, other parent unknown	28.3	33.0		
<i>Closeness to Parents</i>				
Mean	12.11	11.46	---	-8.00***
<i>Closeness to Friends</i>				
Mean	13.33	13.61	---	-4.57**
<i>Parental Monitoring 12-15</i>				
Mean	3.96	3.66	---	3.67***
<i>Parental Monitoring 16-17</i>				
Mean	4.36	3.77	---	3.97***
**significant at the p≤.01 level				
*** significant at the p≤.001 level				

<sup>12</sup> The difference between N's reported with each variable and the total N represents the number of missing values for each variable

Table 6: Correlation Matrix for Variables used in Multivariate Analysis

	Sex	House	Adult	Teen	Unknown	Age	Boy/ Girl	Friend	Parent	Puberty
Sex	1									
House		.09***			.08	.34***	.31***	.05***	-.20***	.25***
Adult			1		.77***	.03*	-.01	-.04**	-.09***	.07***
Teen				1	-.93***	-.03*	-.02	.05***	.10***	-.05***
Unknown					1	.01	.01	-.02	-.02	.00
Age						1	.02	-.04**	-.09***	.05***
Boy/Girl							1	.02	-.17***	.48***
Friend								1	-.11***	.12***
Parent									1	.06***
Puberty										1
Smoke										
Drink										
Marijuana										
Other										
Drugs										
Low-										
Income										
PMK										
Yrs. Edu.										

	Smoke	Drink	Marijuana	Other Drugs	Low-Income	PMK Yrs. Edu.
Sex	.46***	.42***	.51***	.39***	-.08***	-.08***
House	.08***	.02	.08***	.09***	-.37***	-.08***
Adult	-.09***	-.03*	-.07***	-.09***	.33***	.13***
Teen	.03	.02	.00	.02	-.04**	-.09***
Unknown	.08***	.02	.07***	.08***	-.32***	-.10***
Age	.27***	.39***	.34***	.21***	-.06***	-.01
Boy/Girl	.33***	.43***	.37***	.25***	-.04**	-.05***
Friend	.00	.06***	.02	-.02	.04**	.04**
Parent	-.25***	-.23***	-.26***	-.21***	.03	.06***
Puberty	.23***	.34***	.27***	.16***	-.01	-.01
Smoke	1	.52***	.62***	.50***	-.07***	-.09***
Drink		1	.62***	.40***	-.06***	.00
Marijuana			1	.57***	-.05***	-.02
Other Drugs				1	-.06***	-.02
Low-income					1	.18***
PMK Yrs. Edu.						1

<sup>13</sup> Sex: Yes (1)/No (0) Sexual Intercourse

House: Child does not live in a two parent household (1)/Child lives in a two parent household (0)

Teen: Parents teens at time of child's birth (1)/Both parents were post teen and unknown age status of one parent (0)

Unknown: Unknown age status of one parent, other parent not teenage (1)/Both parents were post teen and parents teen (0)

Age: Age

Boy/Girl: Experience with a boy/girlfriend (1)/No experience with a boy/girlfriend (0)

Friend: Closeness to friends scale (scale total 16: S has a lot of friends and positive relationships with other adolescents)

Parent: Closeness to parents scale (scale total 16: S has a close high quality relationship with parents)

Puberty: Onset of puberty scale (scale total 6: Pubertal development seems complete)

Smoke: Experience smoking (1)/No experience smoking (0)

Drink: Experience drinking (1)/No experience drinking (0)

Marijuana: Experience with marijuana (1)/No experience with marijuana (0)

Other Drugs: Experience with other drugs (1)/No experience with other drugs (0)

Low-income cut-off: Values range from 14561 to 46793

PMK Yrs Edu: Main care providers years of education

Table 7: Logistic Regression—Sexual Intercourse Regressed on Socio-demographic and Measures of Learning through Direct Experience or Observation for Females Ages 12-15 Years

Socio-demographics	Model 1a		Model 1b		Model 1c	
	B	Exp (B)	B	Exp (B)	B	Exp (B)
Region						
Atlantic	1.04	2.82**	1.33	3.76***	1.46	4.32**
Quebec	1.05	2.85***	1.14	3.13***	.90	2.45*
Prairies	.38	1.46	.56	1.76	.87	2.39*
British Columbia	-.95	.39	-.86	.42	-1.09	.34
PMK Years Education	.03	1.03	.15	1.16*	.08	1.09
Low Income Cut-Off	.00	1.00	.00	1.00	.00	1.00
<b>Direct Experience &amp; Observation Indicators</b>						
Household Status			-.24	.79	-.40	.67
Teen Status of Parents			1.41	4.09**	1.46	4.31*
Unknown Status of Parents			.36	1.44	.30	1.35
Experience Boy/Girlfriend			2.48	11.97***	1.72	5.57***
Closeness to Friends			.06	1.06	.01	1.01
Closeness to Parents			-.18	.84***	-.10	.90
Puberty			.52	1.68***	.30	1.35
Parental Monitoring			.07	1.07	.03	1.03
Commitment to School			-.17	.84***	-.08	.92
<b>Direct Experience Indicators Related to Smoking, Drinking, Drugs</b>						
Experience Smoking					.96	2.60**
Experience Drinking					.72	2.04
Experience with Marijuana					1.43	4.18***
Experience Other Drugs					.76	2.14*
<b>Missing Value Indicators</b>						
Years Education	.61	1.84	.72	2.04	.50	1.65
Status of Parents			-.57	.57	-.61	.55
Experience Boy/Girlfriend			-.84	.43	-1.79	.17
Closeness to Friends			.06	1.07	.39	1.48
Closeness to Parents			-.18	.84	-20.93	.00
Puberty			1.63	5.09**	1.66	5.27*
Parental Monitoring			1.61	4.99	2.10	8.16
Commitment to School			1.93	6.92*	2.14	8.47*
Experience Smoking					.51	1.66
Experience Drinking					2.70	14.83*
Experience with Marijuana					-1.19	.30
Experience Other Drugs					-.39	.68
X <sup>2</sup>		33.78***		258.17***		98.78***

\* significant at the p≤.05 level

\*\*significant at the p≤.01 level

\*\*\* significant at the p≤.001 level

#### Coding:

Low-income cut-off: Values range from 14561 to 46793

PMK Yrs Edu: Main care provider's years of education

Household status: Child does not live in a two parent household (1)/Child lives in a two parent household (0)

Teen status of parents: Parents teens at time of child's birth (1)/Both parents were post teen and unknown age status of one parent (0)  
 Unknown status of parents: Unknown age status of one parent, other parent not teenage (1)/Both parents were post teen and parents teen (0)  
 Experience Boy/Girlfriend: Experience with a boy/girlfriend (1)/No experience with a boy/girlfriend (0)  
 Closeness to Friend: scale ranges 0-16, high score indicating a lot of friends and positive relationships with other adolescents)  
 Closeness to parents: scale ranges 0-16, high score indicating a close high quality relationship with parents  
 Puberty: scale range 0-6, high score indicating pubertal development seems complete  
 Parental monitoring: scale ranges 0-16, high score indicating a low level of parental monitoring  
 Commitment to school: scale ranges 0-21, high score indicated a high level of commitment to school  
 Experience smoking (1)/No experience smoking (0)  
 Experience drinking (1)/No experience drinking (0)  
 Experience with marijuana (1)/No experience with marijuana (0)  
 Experience with other drugs (1)/No experience with other drugs (0)



Table 8: Logistic Regression—Sexual Intercourse Regressed on Socio-demographic and Measures of Learning through Direct Experience or Observation for Males Ages 12-15 Years

Socio-demographics	Model 1a		Model 1b		Model 1c	
	B	Exp (B)	B	Exp (B)	B	Exp (B)
Region						
Atlantic	.40	1.49	.42	1.51	.32	1.38
Quebec	.90	2.46***	.85	2.34**	.47	1.60
Prairies	.46	1.58	.57	1.76	.11	1.12
British Columbia	.24	1.27	.61	1.85	.21	1.24
PMK Years Education	-.21	.81***	-.18	.83***	-.25	.78***
Low Income Cut-Off	.00	1.00	.00	1.00	.00	1.00
<b>Direct Experience &amp; Observation Indicators</b>						
Household Status			.06	1.06	.07	1.08
Teen Status of Parents			.93	2.52	1.14	3.12*
Unknown Status of Parents			.55	1.73	.82	2.28*
Experience Boy/Girlfriend			1.42	4.15***	1.02	2.77**
Closeness to Friends			.15	1.16**	.11	1.11*
Closeness to Parents			-.08	.92*	-.05	.95
Puberty			.51	1.67***	.43	1.54***
Parental Monitoring			-.06	.94	-.06	.94
Commitment to School			-.13	.88***	-.03	.97
<b>Direct Experience Indicators Related to Smoking, Drinking, Drugs</b>						
Experience Smoking					.93	2.54***
Experience Drinking					1.04	2.82**
Experience with Marijuana					.98	2.67***
Experience Other Drugs					.66	1.93*
<b>Missing Value Indicators</b>						
Years Education	.60	1.82	1.25	3.48*	1.63	5.11**
Status of Parents			1.07	2.92	1.67	5.33*
Experience Boy/Girlfriend			-4.02	.02	-3.93	.02*
Closeness to Friends			-1.16	.31	-1.04	.36
Closeness to Parents			2.36	10.57***	2.59	13.36**
Puberty			.49	1.64	.66	1.94
Parental Monitoring			-2.03	.13	-1.35	.26
Commitment to School			1.38	3.96*	1.37	3.92
Experience Smoking					1.07	2.91
Experience Drinking					-.97	.38
Experience with Marijuana					-.89	.41
Experience Other Drugs					.49	1.62
$X^2$		38.47***		217.51***		115.87***

\* significant at the  $p \leq .05$  level

\*\*significant at the  $p \leq .01$  level

\*\*\* significant at the  $p \leq .001$  level

#### Coding:

Low-income cut-off: Values range from 14561 to 46793

PMK Yrs Edu: Main care provider's years of education

Household status: Child does not live in a two parent household (1)/Child lives in a two parent household (0)

Teen status of parents: Parents teens at time of child's birth (1)/Both parents were post teen and unknown age status of one parent (0)  
 Unknown status of parents: Unknown age status of one parent, other parent not teenage (1)/Both parents were post teen and parents teen (0)  
 Experience Boy/Girlfriend: Experience with a boy/girlfriend (1)/No experience with a boy/girlfriend (0)  
 Closeness to Friend: scale ranges 0-16, high score indicating a lot of friends and positive relationships with other adolescents)  
 Closeness to parents: scale ranges 0-16, high score indicating a close high quality relationship with parents  
 Puberty: scale range 0-6, high score indicating pubertal development seems complete  
 Parental monitoring: scale ranges 0-16, high score indicating a low level of parental monitoring  
 Commitment to school: scale ranges 0-21, high score indicated a high level of commitment to school  
 Experience smoking (1)/No experience smoking (0)  
 Experience drinking (1)/No experience drinking (0)  
 Experience with marijuana (1)/No experience with marijuana (0)  
 Experience with other drugs (1)/No experience with other drugs (0)

Table 9: Logistic Regression—Sexual Intercourse Regressed on Socio-demographic and Measures of Learning through Direct Experience or Observation for Females Ages 16-17 Years

Socio-demographics	Model 1a		Model 1b		Model 1c	
	B	Exp (B)	B	Exp (B)	B	Exp (B)
Region						
Atlantic	.20	1.22	.20	1.22	.26	1.30
Quebec	1.00	2.73***	1.16	3.19***	1.16	3.18***
Prairies	-.02	.98	.54	1.72	.49	1.63
British Columbia	.35	1.42	.44	1.54	.32	1.38
PMK Years Education	-.11	.89	-.16	.85***	-.19	.83***
Low Income Cut-Off	.00	1.00	.00	1.00	.00	1.00*
<b>Direct Experience &amp; Observation Indicators</b>						
Household Status			.70	2.01	.38	1.47
Teen Status of Parents			.50	1.65	.56	1.76
Unknown Status of Parents			-.07	.93	.05	1.05
Experience Boy/Girlfriend			2.30	10.01***	1.89	6.60***
Closeness to Friends			.09	1.09*	.08	1.08
Closeness to Parents			-.09	.91**	-.08	.92*
Puberty			.19	1.21	.15	1.16
Parental Monitoring			.06	1.06	.04	1.04
Commitment to School			-.07	.93	-.02	.98
<b>Direct Experience Indicators Related to Smoking, Drinking, Drugs</b>						
Experience Smoking					-.14	.87
Experience Drinking					.62	1.85
Experience with Marijuana					.85	2.34***
Experience Other Drugs					.84	2.31**
<b>Missing Value Indicators</b>						
Years Education	.52	1.69	1.20	3.31	1.15	3.14
Parental Status			-.21	.82	-.66	.52
Experience Boy/Girlfriend			1.86	6.41***	1.53	4.63***
Closeness to Friends			1.73	5.66**	2.32	10.17***
Closeness to Parents			.16	1.18	.09	1.10
Puberty			-.65	.52	-.10	.91
Parental Monitoring			-22.21	.00	-61.17	.00
Commitment to School			-.19	.83	-.15	.86
Experience Smoking					20.50	7.96E <sup>8</sup>
Experience Drinking					-18.38	.00
Experience with Marijuana					-18.98	.00
Experience Other Drugs					56.03	2.16E <sup>24</sup>
X <sup>2</sup>		64.26***		345.85***		62.86***

\* significant at the p≤.05 level

\*\*significant at the p≤.01 level

\*\*\* significant at the p≤.001 level

#### Coding:

Low-income cut-off: Values range from 14561 to 46793

PMK Yrs Edu: Main care provider's years of education

Household status: Child does not live in a two parent household (1)/Child lives in a two parent household (0)

Teen status of parents: Parents teens at time of child's birth (1)/Both parents were post teen and unknown age status of one parent (0)  
 Unknown status of parents: Unknown age status of one parent, other parent not teenage (1)/Both parents were post teen and parents teen (0)  
 Experience Boy/Girlfriend: Experience with a boy/girlfriend (1)/No experience with a boy/girlfriend (0)  
 Closeness to Friend: scale ranges 0-16, high score indicating a lot of friends and positive relationships with other adolescents)  
 Closeness to parents: scale ranges 0-16, high score indicating a close high quality relationship with parents  
 Puberty: scale range 0-6, high score indicating pubertal development seems complete  
 Parental monitoring: scale ranges 0-16, high score indicating a low level of parental monitoring  
 Commitment to school: scale ranges 0-21, high score indicated a high level of commitment to school  
 Experience smoking (1)/No experience smoking (0)  
 Experience drinking (1)/No experience drinking (0)  
 Experience with marijuana (1)/No experience with marijuana (0)  
 Experience with other drugs (1)/No experience with other drugs (0)

Table 10: Logistic Regression—Sexual Intercourse Regressed on Socio-demographic and Measures of Learning through Direct Experience or Observation for Males Ages 16-17 Years

Socio-demographics	Model 1a		Model 1b		Model 1c	
	B	Exp (B)	B	Exp (B)	B	Exp (B)
Region						
Atlantic	-.11	.90	.14	1.15	.14	1.15
Quebec	.16	1.17	.12	1.13	.03	1.03
Prairies	-1.27	.28	-.88	.41**	-.68	.51*
British Columbia	-.54	.58	-.58	.56	-.59	.56
PMK Years Education	-.06	.94	-.09	.92*	-.07	.93
Low Income Cut-Off	.00	1.00	.00	1.00	.00	1.00
<b>Direct Experience &amp; Observation Indicators</b>						
Household Status			.35	1.42	.32	1.37
Teen Status of Parents			.49	1.63	.39	1.48
Unknown Status of Parents			.11	1.11	.03	1.03
Experience Boy/Girlfriend			1.05	2.86***	.66	1.94*
Closeness to Friends			.09	1.09*	.05	1.05
Closeness to Parents			-.10	.91***	-.03	.98
Puberty			.26	1.30**	.34	1.41**
Parental Monitoring			.08	1.08**	.03	1.03
Commitment to School			.01	1.01	.08	1.09*
<b>Direct Experience Indicators Related to Smoking, Drinking, Drugs</b>						
Experience Smoking					1.11	3.03***
Experience Drinking					.42	1.53
Experience with Marijuana					1.28	3.58***
Experience Other Drugs					.20	1.22
<b>Missing Value Indicators</b>						
Years Education	.60	1.83	1.14	3.11	1.21	3.34
Parent Status			-.60	.55	.25	1.28
Experience Boy/Girlfriend			.65	1.92	.52	1.69
Closeness to Friends			.81	2.26	.96	2.60
Closeness to Parents			-4.71	.01**	1.69	5.43
Puberty			-1.11	.33	-.28	.76
Parental Monitoring			1.04	2.82	2.04	7.67*
Commitment to School			-.62	.54	-.49	.61
Experience Smoking					-1.03	.36
Experience Drinking					1.72	5.56*
Experience with Marijuana					.73	2.07
Experience Other Drugs					-9.62	.00**
X <sup>2</sup>		42.63***		234.73***		132.92***

\* significant at the p≤.05 level

\*\*significant at the p≤.01 level

\*\*\* significant at the p≤.001 level

#### Coding:

Low-income cut-off: Values range from 14561 to 46793

PMK Yrs Edu: Main care provider's years of education

Household status: Child does not live in a two parent household (1)/Child lives in a two parent household (0)

Teen status of parents: Parents teens at time of child's birth (1)/Both parents were post teen and unknown age status of one parent (0)  
 Unknown status of parents: Unknown age status of one parent, other parent not teenage (1)/Both parents were post teen and parents teen (0)  
 Experience Boy/Girlfriend: Experience with a boy/girlfriend (1)/No experience with a boy/girlfriend (0)  
 Closeness to Friend: scale ranges 0-16, high score indicating a lot of friends and positive relationships with other adolescents)  
 Closeness to parents: scale ranges 0- 16, high score indicating a close high quality relationship with parents  
 Puberty: scale range 0-6, high score indicating pubertal development seems complete  
 Parental monitoring: scale ranges 0-16, high score indicating a low level of parental monitoring  
 Commitment to school: scale ranges 0-21, high score indicated a high level of commitment to school  
 Experience smoking (1)/No experience smoking (0)  
 Experience drinking (1)/No experience drinking (0)  
 Experience with marijuana (1)/No experience with marijuana (0)  
 Experience with other drugs (1)/No experience with other drugs (0)

Table 11: Unstandardized and Standardized OLS Regression —Age Regressed on Socio-demographic and Measures of Learning through Direct Experience or Observation for Females who have Engaged in Sexual Intercourse

Socio-demographics	Model 1a		Model 1b		Model 1c	
	B	Beta	B	Beta	B	Beta
Region						
Atlantic	-.44	-.13*	-.36	-.11*	-.45	-.12*
Quebec	-.28	-.14*	-.26	-.12*	-.39	-.17**
Prairies	-.31	-.11*	-.36	-.13*	-.55	-.17**
British Columbia	.17	.05	.24	.08	-.52	-.14**
Low Income Cut-Off	-2.14E <sup>-5</sup>	-.12**	-2.21E <sup>-5</sup>	-.13**	-2.65E <sup>-5</sup>	-.16**
<b>Direct Experience &amp; Observation Indicators</b>						
Closeness to Friends			.00	.01	.00	.00
Closeness to Parents			.06	.20***	.05	.17***
Puberty			.46	.28***	.45	.28***
<b>Direct Experience Indicators Related to Smoking, Drinking, Drugs</b>						
Experience Smoking					-.36	-.17**
Experience Drinking					.02	.01
Experience with Marijuana					-.01	-.01
Experience Other Drugs					.00	.00
<b>Missing Value Indicators</b>						
Closeness to Friends			-.92	-.18***	-1.03	-.20
Closeness to Parents			.09	.01	.13	.01
Puberty			.22	.04	.09	.02
Experience Smoking					-.05	-.01
Experience Drinking					-1.68	-.18*
Experience with Marijuana					1.89	.16
Experience Other Drugs					-.70	-.07
R <sup>2</sup>		.05***		.19***		.23***
* significant at the p≤.05 level						
**significant at the p≤.01 level						
*** significant at the p≤.001 level						

**Coding:**

Low-income cut-off: Values range from 14561 to 46793

PMK Yrs Edu: Main care provider's years of education

Household status: Child does not live in a two parent household (1)/Child lives in a two parent household (0)

Teen status of parents: Parents teens at time of child's birth (1)/Both parents were post teen and unknown age status of one parent (0)

Unknown status of parents: Unknown age status of one parent, other parent not teenage (1)/Both parents were post teen and parents teen (0)

Experience Boy/Girlfriend: Experience with a boy/girlfriend (1)/No experience with a boy/girlfriend (0)

Closeness to Friend: scale ranges 0-16, high score indicating a lot of friends and positive relationships with other adolescents)

Closeness to parents: scale ranges 0-16, high score indicating a close high quality relationship with parents  
Puberty: scale range 0-6, high score indicating pubertal development seems complete  
Parental monitoring: scale ranges 0-16, high score indicating a low level of parental monitoring  
Commitment to school: scale ranges 0-21, high score indicated a high level of commitment to school  
Experience smoking (1)/No experience smoking (0)  
Experience drinking (1)/No experience drinking (0)  
Experience with marijuana (1)/No experience with marijuana (0)  
Experience with other drugs (1)/No experience with other drugs (0)



Table 12: Unstandardized and Standardized OLS Regression—Age of First Sexual Intercourse Regressed on Socio-demographic and Measures of Learning through Direct Experience or Observation for Males who have Engaged in Sexual Intercourse

Socio-demographics	Model 1a		Model 1b		Model 1c	
	B	Beta	B	Beta	B	Beta
Region						
Atlantic	-.49	-.13*	-.51	-.14	-.45	-.12*
Quebec	-.42	.14**	-.43	-.19***	-.39	-.17**
Prairies	-.63	-.19***	-.61	-.18***	-.55	-.17**
British Columbia	-.40	-.11	-.50	-.14**	-.52	-.14**
Low Income Cut-Off	-1.64E <sup>-5</sup>	-.10	-1.78E <sup>-5</sup>	-.11*	-2.65E <sup>-5</sup>	-.16**
<b>Direct Experience &amp; Observation Indicators</b>						
Closeness to Friends			.05	.11*	.06	.15**
Closeness to Parents			.01	.03	.03	.09
Puberty			.24	.25***	.32	.33***
<b>Direct Experience Indicators Related to Smoking, Drinking, Drugs</b>						
Experience Smoking					-.02	-.01
Experience Drinking					.34	.12
Experience with Marijuana					.19	.08
Experience Other Drugs					.06	.03
<b>Missing Value Indicators</b>						
Closeness to Friends			.35	.06	.15	.02
Closeness to Parents			-1.49	-.21	-1.26	-.18***
Puberty			-.39	-.08	-.21	-.05
Experience Smoking					-1.17	-.12*
Experience Drinking					1.72	.37***
Experience with Marijuana					.01	.00
Experience Other Drugs					-.74	.20
R <sup>2</sup>		.05**		.18***		.27***

\* significant at the p≤.05 level

\*\*significant at the p≤.01 level

\*\*\* significant at the p≤.001 level

#### Coding:

Low-income cut-off: Values range from 14561 to 46793

PMK Yrs Edu: Main care provider's years of education

Household status: Child does not live in a two parent household (1)/Child lives in a two parent household (0)

Teen status of parents: Parents teens at time of child's birth (1)/Both parents were post teen and unknown age status of one parent (0)

Unknown status of parents: Unknown age status of one parent, other parent not teenage (1)/Both parents were post teen and parents teen (0)

Experience Boy/Girlfriend: Experience with a boy/girlfriend (1)/No experience with a boy/girlfriend (0)

Closeness to Friend: scale ranges 0-16, high score indicating a lot of friends and positive relationships with other adolescents)

Closeness to parents: scale ranges 0- 16, high score indicating a close high quality relationship with parents  
Puberty: scale range 0-6, high score indicating pubertal development seems complete  
Parental monitoring: scale ranges 0-16, high score indicating a low level of parental monitoring  
Commitment to school: scale ranges 0-21, high score indicated a high level of commitment to school  
Experience smoking (1)/No experience smoking (0)  
Experience drinking (1)/No experience drinking (0)  
Experience with marijuana (1)/No experience with marijuana (0)  
Experience with other drugs (1)/No experience with other drugs (0)

Table 13: Logistic Regressions – Hypothesis 2

Model 1: Dependent Variable-Sexual Intercourse at 16-17 years of age (Cycle 4)

<b>Criterion Variables</b>	<b>B</b>	<b>Exp (B)</b>
Experience Boy/Girlfriend at 14-15 years (Cycle 3)	1.64	5.15***
Level of Sexual Experience at 12-13 years (Cycle 2)	.38	1.46***
Missing Value Indicator Experience Boy/Girlfriend at 14-15 years	1.86	6.44***
$\chi^2(3)= 330.31, p<.001$		

Model 2: Dependent Variable-Experience with a Boy/Girlfriend at 14-15 years of age  
(Cycle 3)

<b>Criterion Variables</b>	<b>B</b>	<b>Exp (B)</b>
Level of Sexual Experience at 12-13 years (Cycle 2)	.31	1.37***
Missing Value Indicator Level of Sexual Experience at 12-13 years	-.78	.46***
$\chi^2(2)= 156.82, p<.001$		

Model 3: Dependent Variable-Sexual Intercourse at 14-15 years of age (Cycle 3)

<b>Criterion Variable</b>	<b>B</b>	<b>Exp (B)</b>
Level of Sexual Experience at 12-13 years (Cycle 2)	.55	1.73***
$\chi^2(1)= 151.53, p<.001$		

Coding:

Experience with boy/girlfriend: Experience with a boy/girlfriend (1)/No experience with a boy/girlfriend (0)

Level of sexual experience: Scale ranges from 0-6, high score indicates S has had sexual intercourse

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